

COMPUTERWORLD

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HP rides New Wave into office

*Ties interface to plans
for multivendor world*

BY JEAN S. BOZMAN
CW STAFF

CUPERTINO, Calif. — Hewlett-Packard Co. handed IS professionals the keys to its New Wave graphical interface last week, announcing 15 software packages that use the Windows-based system on a wide array of office services and industry-standard database formats.

New Wave Office, the suite of integrated products, extends software services typically found on HP 3000 minicomputers to industry-standard operating systems: Unix, MS-DOS and OS/2.

Among these services are electronic mail, shared data resources and access to remote databases, including IBM's DB2.

Hopes are high

There are few early New Wave Office sites outside HP, but some customers who have recently signed on to the interface have high hopes for the system.

At Houghton Mifflin Co., a Boston-based publishing firm, New Wave Office could extend existing HP 3000 downlinking capabilities, said Edward Collins, manager of planning and technical consulting.

"Our HP 3000 provides an SNA gateway to our IBM

Continued on page 6

Justice aims database at gun sales

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The U.S. Department of Justice has decided to build a complete computerized database that lists convicted felons so that

Merger-weary users turn wary

BY AMY CORTESE
CW STAFF

The software industry has been caught up in its own version of "Let's Make a Deal" that shows no signs of abating, leaving customers wondering whether smaller firms — traditionally the lifeblood of the software industry — can play in a game where the stakes have been raised.

The proposed merger of Management Science America, Inc. and McCormack & Dodge Corp. is the latest and most dramatic example of a market that is in the throes of consolidation.

While a powerful suitor can provide the research and development capital that small software companies need to survive, customers see consolidation as a double-edged sword.

"On the positive side, it strengthens the financial resources behind companies," said James Matsey, corporate director of information systems at Reynolds Metal Corp. But consolidation inevitably results in higher prices for the end user as

companies raise prices to help pay for the costs of the acquisition, Matsey added.

"I'm concerned about less competition in the software marketplace," said Richard Lester, vice-president of corporate development at Associated Grocers, Inc. in Seattle. "If this keeps up, there aren't going to be a lot of choices left."

"CA has already cornered the market in some areas of systems software. I am dramatically concerned about this," Lester noted.

"Right now, we are going through a time where little companies will not survive; they will have to join," said Melvin Boyer, director of data processing at Louisiana Pacific Corp.

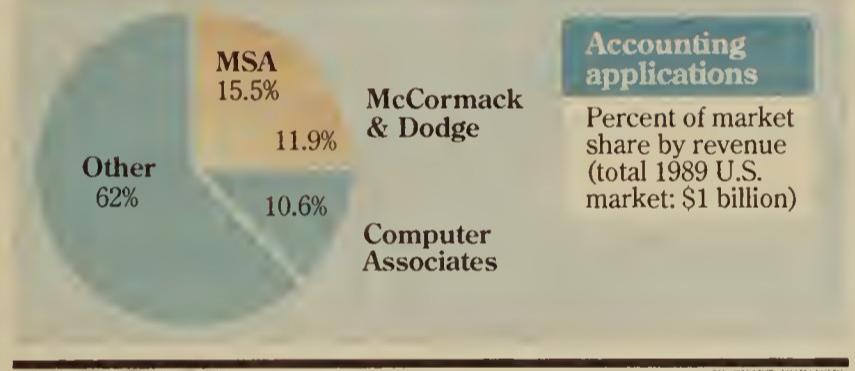
Typically, users are not as concerned about fewer choices in features and functionality from competing packages as they are about the prospect of increased prices.

Most of those contacted last week agreed that cross-industry applications such as accounting

Continued on page 141

Drawn and quartered

The merger of MSA and McCormack & Dodge will lock up roughly one-fourth of the market share for accounting applications



Accounting applications

Percent of market share by revenue (total 1989 U.S. market: \$1 billion)

The advantages of such a migration were made abundantly clear during a multiyear EDS project to link some 70,000 electronic mail users and 16 different E-mail systems at GM.

Dubbed Diamondnet because of its multifaceted ability to translate disparate protocols, the project began in 1984 "when GM wanted to use E-mail instead of an overnight pouch that took four days," according to Michael Flynn, division manager of special program support.

The system became functional in late 1986 and now connects up to 12 types of E-mail systems. EDS did not find it necessary to link all GM users and systems, connecting only those groups that needed to communicate, according to Peter Kugel, account manager for technical services product support.

"We would have liked to get it down to one [E-mail] system, but different mail systems satisfy different needs in [GM's] global, complex organization," Flynn said.

EDS came up with Diamondnet, a shell for providing translation between whatever electronic mail systems need to

in the prototype phase of a strategy that will migrate all the systems at its parent company to two internal networking standards: Open Systems Interconnect and IBM's Systems Network Architecture.

more accurate and complete.

Thornburgh said the FBI will be in charge of building an integrated database of convicted felons and establishing standards that states will be able to follow when reporting data. The Justice Department will dole out \$27 million in grants during the next three years to help states comply with the FBI data standards.

A federal task force reported that there is a mixture of

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Quotable

For us, it is sizzle. We have stooped to delivering sizzle.

ROBERT METCALFE
3COM

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EXECUTIVE BRIEFING

■ Despite notable exceptions such as Kendall Co., Fortune 500 firms will retain strong centralized information systems control, according to forthcoming Index Group survey results. A solid 82% of surveyed IS executives in the U.S. are confident that their firms will continue centralized IS oversight throughout the 1990s. The company may be highly decentralized, but corporate IS has the final say on issues such as technology standards and volume purchase agreements. **Page 14.**

■ Global networking strategies take center stage at three corporate giants. At General Motors, EDS will attempt to standardize all of its parent's far-flung networks on OSI and IBM's SNA. **Page 1.** General Electric's private international voice, data and video network is up and running, with bandwidth provided by carriers in the U.S., UK and France. **Page 6.** Aetna Life & Casualty became one of the largest organizations to take the Tariff 12 plunge, inking a three-year deal for AT&T to manage its inbound voice transmission services. MCI remains the carrier for Aetna's outbound voice traffic. **Page 56.**

■ High-level executive computing is far from commonplace, but some functions are catching on in the corner office. Electronic mail is the most popular, but many executives are dipping into corporate databases to find new business insights and emerging trends. Failure of executive support systems usually results from poor requirement definition and poor estimation of necessary development resources. **Page 79.**

■ Understanding your business is only the beginning. The successful IS executives of the 1990s will be leaders who are able to inspire change within their companies, with information technology as the enabler. **Page 75.**

■ Bigger is not necessarily better in the software industry, many customers believe. Many IS executives are concerned about fewer choices, less vendor creativity and higher prices in the wake of MSA/McCormack & Dodge, Computer Associates/Cullinet and other recent consolidations. **Page 1.** Former MSA and M&D executives say they believe that the two arch-rivals can overcome their contentious past but expect major staff and product-line consolidations for the merger to succeed. **Page 141.**

■ DEC moved to reduce conflicts with its third-party resellers over sales commissions, which should result in better prices and services for DEC customers. A top DEC executive admitted that the No. 2 vendor has erred in biting the hand that feeds it. **Page 10.**

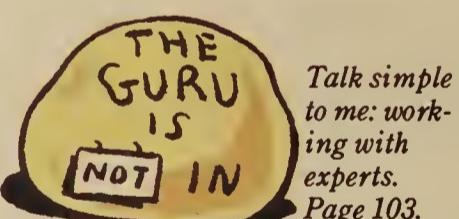
■ Users writing their own network management systems may be wasting time, says the founder of 3Com. An interview with outspoken Robert Metcalfe touches on product hype, networking standards and "the morass of OSI." **Page 53.**

■ On-site this week: Redundancy and flexibility are the gospel at Visa USA, where 100% uptime is critical for credit authorization transactions. Duplicate mainframes, network gateways, terminals, power supplies and data centers help keep Visa humming through earthquakes and Christmas shopping seasons. **Page 23.** While Visa accounts load up with money-spenders, the U.S. Customs Service is keeping a sharp eye peeled for money-launderers — with help from an Apollo workstation-based expert system. The Customs Artificial Intelligence System uses a series of rules to emulate investigators and spot suspicious transaction activity. **Page 39.**

T

UPDATE

The bit is mightier than the sword. In a recent address, former Secretary of State George Shultz argued that the revolution in information technology is reshaping the sovereignty of nations, causing national boundaries to blur. "Borders are becoming porous, almost irrelevant, in more and more areas of sovereign importance: money, ideas, information, missiles," he said. The kind of confederation of states defined by the U.S. is now applicable worldwide because of technology. And some people still think information systems just processes the payroll and pumps out reports.



DAVID JOEL
A fully automated warehouse is part of a new look for IS at Helene Curtis Industries. **Page 71.**

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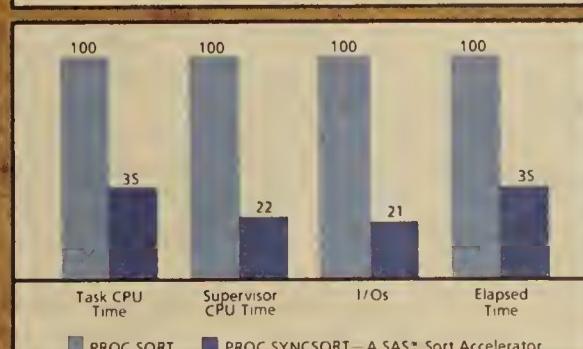
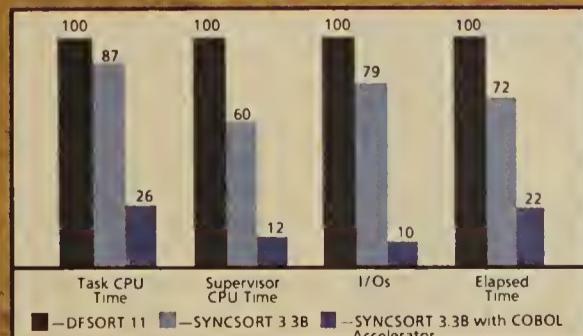
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IBM's Unix plan going to RIOS

BY AMY CORTESE
CW STAFF

While IBM's next-generation reduced instruction set computing (RISC) systems remain hidden behind closed doors, industry observers said it is clear that this time IBM is launching a serious Unix offensive.

The successors to the slow-selling RT workstations will represent a leap in sophistication from current Unix-based workstations, according to industry observers.

IBM has indeed made a major effort to ensure that the software is available when the new systems debut. "They want to make a big splash with this," said Rick Martin, an IBM watcher with Prudential-Bache Securities, Inc.

IBM has lined up literally hundreds of software developers to provide AIX applications, by some estimates. Moreover, observers said that IBM is essentially subsidizing the development and porting work of software vendors.

According to Brian Jeffery, managing director at International Technology Group in Los Altos, Calif., IBM has shelled out at least \$300 million to developers, in effect "reversing the normal dynamics of the software market." Other analysts have speculated that IBM has paid as much as \$5 million to a developer for one port.

"When it comes to third-party software, IBM tends to subsidize," agreed Martin, a former

IBM product manager. These subsidies can take the form of free equipment, loans, prepaid royalties and, as witnessed over the past year, direct investments in software firms.

The family of systems is expected to be based on an expandable multiprocessor architecture using a new chip design and IBM's Micro Channel Architecture bus design.

The multiprocessor configuration will allow overall performance rates of as much as 100 million instructions per second and "the potential to go way beyond," Jeffery predicted.

Jeffery said IBM will also introduce a DB2-like relational database management system, LU6.2 cooperative processing capability and compact disc/read-only memory storage.

The systems, dubbed RIOS by analysts, will run a new version of IBM's AIX Unix-based operating system that is optimized for the architecture, observers said.

That optimization might have been a factor in the Open Software Foundation's (OSF) decision to turn to the Mach kernel provided by Carnegie-Mellon University as a replacement for some AIX code that IBM, an OSF member, had agreed to provide for the group's version of Unix.

Sources close to OSF confirmed that AIX was tuned to an IBM architecture and was not as portable as had been expected. In particular, AIX's virtual memory manager hindered portability.

ity, a source said. AIX also fell short of some original expectations, such as its on-line transaction processor functionality.

"The AIX kernel has the same problem AT&T had" with tuning its Unix System V for Sun Microsystems, Inc.'s Scalable Processor Architecture, Martin said. "Just as OSF was unhappy with AT&T, they were probably

cessful, particularly with commercial applications, in which IBM has unrivaled draw.

IBM has indicated that the new systems may debut in the first quarter; observers and sources close to IBM have variously pegged the date for as early as the first week of January to mid-February. IBM staffers in the RIOS project's Austin, Texas, headquarters are working around the clock and shooting for a January announcement, ac-

High-RISC stakes

Personal workstations — RISC systems at PC prices — are projected to increase market share from low levels in 1988 to challenge Intel-based PCs

Worldwide shipments of U.S.-based vendors (in thousands)



*Projected

SOURCE: INTERNATIONAL DATA CORP.

CW CHART, JOHN YORK

less than thrilled with AIX."

AIX presents a dual problem for OSF, Martin said, because while it is optimized for a specific architecture, at the same time its performance is suboptimized because it must scale such a broad range of platforms, from the IBM Personal System/2 to the 3090 mainframe.

Nonetheless, many believe IBM's Unix family will be suc-

cording to one source.

In the face of IBM's characteristic reticence, there has been widespread speculation on reasons behind the delay of the RIOS systems. Explanations center around two theories: internal conflict between IBM's Application System/400 group and the RIOS project, or IBM is simply holding out for a full selection of third-party software.

Tariff 12 for custom private networks, which has created fierce competition among the three major long-distance carriers for user business [CW, Nov. 13].

As a practical matter, the FCC's decision on strategic pricing was a reversal from previous policy, which gave the BOCs the flexibility to base private-line rates on noncost factors such as bypass [CW, Oct. 17, 1988].

According to the FCC, some limited instances of strategic

pricing were justified from 1985 to 1988, but that is no longer the case. Reductions in the common-carrier line charge for businesses have reduced the incentive for large users to bypass the local telephone network, the FCC reasoned.

From now on, an FCC statement said, the commission "expects local-exchange carriers to refrain from filing strategically priced rates."

The justification for changing

policy was designed to protect the order from being overturned in court. In reality, "the biggest change is that we have some new blood" at the FCC, Moir said.

In a related order, the FCC directed some BOCs to refund amounts, which exceeded a set of cost guidelines that the FCC established for strategic pricing in 1988.

The exact amount of the refunds, which will go to long-distance carriers and large business users of private lines, will be determined after the BOCs file detailed reports in late January of next year.

The BOCs making refunds include units of Ameritech, Bell Atlantic Corp., BellSouth Corp., Pacific Telesis Group, Southwestern Bell Corp. and US West, Inc. Moir noted that ordering refunds is a very rare event at the FCC.

The FCC's investigation of strategic pricing had languished for three years until the ICA filed suit to force its resolution and lobbied for legislation setting deadlines on tariff investigations [CW, Aug. 15, 1988]. "The previous commission refused to deal with this issue," Moir said.

FCC gongs Bell, helps out user pocketbooks

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Users are on a roll at the new Federal Communications Commission (FCC). Since Alfred C. Sikes took over as chairman, the FCC has upheld Tariff 12 and last week ordered the former Bell operating companies (BOC) to stop inflating the price of private-line services.

The FCC ruled that so-called "strategic pricing," loathed by big telecommunications services users, is no longer justified and private-line rates should be based on costs. Furthermore, the commission ordered refunds of as much as \$75 million for past abuses of its strategic pricing guidelines.

With strategic pricing, local carriers raised the price of high-capacity private lines to discourage big users from bypassing the local telephone network.

Brian R. Moir, counsel to the International Communications Association (ICA), said the FCC agreed with users that the strategic pricing tariffs "were obscenely high." He also praised the FCC for embracing a concept long favored by

users — cost-based pricing. "That was refreshing and was long overdue," Moir said.

"Chairman Sikes and his team view all public policy issues from the point of view of user benefits," commented FCC-watcher Alan Pearce, president of Information Age Economics, Inc. in Bethesda, Md. "He is a friend of the user community," Pearce said.

In October, users hailed the FCC decision in favor of AT&T's



FCC's Sikes seen in users' corner

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1:IBM Journal of SAA 2:DATAPRO survey, August 1988, companies with sales over \$10 million 3:Donaldson, Lufkin & Jenrette report

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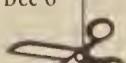
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The price is right for video ISDN

BY ELLIS BOOKER
CW STAFF

CHICAGO — At these prices, maybe it will be video, not voice or data services, that makes the Integrated Services Digital Network (ISDN) a commercial winner.

As expected, Andersen Consulting, Illinois Bell and AT&T last week demonstrated the first ISDN-based international video connection. The videoconferencing link, which combined two ISDN Basic Rate Interface (BRI) lines into a 112K bit/sec. video channel, connected Andersen's Chicago world headquarters with its Tokyo office.

Pricing for the service, which requires ISDN Centrex from Illinois Bell for the local connection as well as Switched Digital Inter-



national (SDI) service from AT&T for the leg between Chicago and Tokyo, works out as follows: For a 50-line ISDN system from Illinois Bell (the Ameritech ISDN Centrex Service is, for now, only sold in blocks of 50 lines), the videoconferencing application over one ISDN line costs \$16.96 per month with a \$146.50 installation fee. The cost of AT&T's SDI service, which comes with a minimum \$95 monthly usage charge, is \$3.95 for the first minute and \$2.50 for each additional minute.

Lyle Ginsburg, a partner at Andersen Consulting's telecommunications group who is helping to set up the firm's Asian Pacific telecommunications consulting practice, hopes the video link proves popular and cost-effective.

based on Microsoft Corp.'s Windows, provides a way to "encapsulate" MS-DOS applications, such as Lotus Development Corp.'s 1-2-3 spreadsheet, into its icon-oriented screen format.

New Wave Office will allow users to incorporate data gathered from the corporate network into a Lotus spreadsheet on their desktop and to distribute the new report to co-workers on the corporate network.

New Wave's advantages, however, will have to be balanced by new responsibilities for

"I'm supposed to average a week a month in Tokyo," said Ginsburg, who is looking forward to holding some meetings with Japanese colleagues while staying put in Chicago.

Considering that a round-trip airplane ticket to Tokyo costs approximately \$2,600 these days, that could be a good idea all around.

In addition, users must also pay the long-distance and local carriers located in Japan — Kokusai Denshin Denwa Co. Ltd. (KDD) and Nippon Telegraph and Telephone Corp. (NTT), respectively.

NTT's initial costs include an 800-yen contract fee plus a 72,000-yen BRI line fee and a 54,000-yen monthly business rate.

KDD's international ISDN rates are 225 yen for the first 30 seconds, 45 yen from six seconds up to one minute and 22 yen per six seconds thereafter.

GE net: On-line, on time

BY ELISABETH HORWITT
CW STAFF

FAIRFIELD, Conn. — General Electric Co.'s global private network went on-line last Friday, on schedule and exactly six months after the contract was signed. There were no hitches, according to Stanley Welland, the company's manager of corporate telecommunications.

The network, which will provide GE with a global seven-digit dialing system for voice, data and video services, represents a "real team effort" between the manufacturer and its three network providers: AT&T, France Telecom and British Telecom.

One unique aspect of the project from GE's point of view was

the company's dependence on support from other vendors overseas, "since there is no extension of our organization in Europe," Welland said. GE manages the international network, along with its domestic network, from a central network control center in Princeton, N.J., but must depend on the carriers to keep the overseas portion of the network running and feed back management information, Welland said.

This initial phase of the network connects GE's U.S. offices with sites in France, the UK and the Netherlands. The company plans to connect its offices in the Far East, Australia, the Middle East and South America in the early 1990s.

AT&T's digital service will pick up its connection pace

BY ELLIS BOOKER
CW STAFF

AT&T's Switched Digital International (SDI) service will soon run a little quicker, increasing from its current 56K bit/sec. pace to 64K bit/sec., *Computerworld* has learned.

The faster rate, due at the end of the year, will bring AT&T's digital service in line with European and Japanese CCITT-compliant networks and will position AT&T for a standard, international Integrated Services Digital Network (ISDN) service.

According to AT&T sources, the service will likely begin in the UK and Japan. SDI is currently available in the UK, Japan, France and Jamaica. Users will still be able to use SDI for 56K bit/sec. traffic, AT&T said.

For users, the added speed could simplify the job of connecting U.S. and foreign networks using switched services.

"The real advantage is to international customers in countries with embedded 64K bit/sec. networks," said Nancy Buvokina, manager of SDI services. She said customers will be able to replicate transmission gear on each side of the SDI link and do away with the rate adapters they now require.

Not only is 64K bit/sec. a common international speed, it is the designated rate of a single channel on an ISDN line. Each ISDN Basic Rate Interface (BRI) line contains two 64K bit/sec. channels and one 16K bit/sec. packet data signaling channel.

"This is sort of a step toward ISDN," said Steve Sazegari, a senior industry analyst at Dataquest, Inc. in San Jose, Calif. He noted, however, that the switched service will be available

only to users with private-line access to AT&T's local point of presence. On the other hand, he said, local phone companies will increasingly offer ISDN access services.

Just last week, Andersen Consulting in Chicago established a video teleconferencing link with its Tokyo offices using ISDN Centrex service from Illinois Bell connected to AT&T's SDI (see story this page).

Flip side

"If I can configure a network with 64K bit/sec. clear channel, why do I need ISDN?" asked Stanley Welland, manager of corporate telecommunications at General Electric Co. in Fairfield, Conn.

While Welland said he understood the advantages of the service, including its compatibility with local-area networks in Europe and Japan, he said GE does not have plans to use dial-up access for its international network.

That private-line network, which GE turned on last week, uses AT&T, France Telecom and British Telecom facilities and will eventually connect the UK, France, the Netherlands, Spain, West Germany, Italy and Ireland.

Pricing details for the higher speed SDI have yet to be announced.

MCI Communications Corp. does not currently have a dial-up 64K bit/sec. option, although a spokesman for the carrier said this capability is planned for sometime next year.

U.S. Sprint Communications Co. is currently implementing software and will have a 56K/64K bit/sec. offering in the second half of 1990, according to the company.

New Wave

FROM PAGE 1

mainframe that could be used in conjunction with New Wave," Collins said. "We'd like to make mainframe communications easier for casual end users, and we'd also like to encapsulate existing MS-DOS applications into the New Wave interface."

New Wave Office will allow HP 3000 users to seamlessly integrate applications running under the MS-DOS, OS/2, Unix and proprietary HP MPE operating systems.

HP's plan to transform standard minicomputers into servers, just in time for the distributed data architecture of the 1990s, was praised by some as inventive. "I think HP is being very clever in finding a way to get client-server computing out of a minicomputer," said George Colony, president of Forrester Research, Inc. in Cambridge, Mass. "It [the minicomputer] may not be as elegant as a modern server, but the user is getting a full graphical interface and New Wave's object-oriented data management system."

Other users will be able to generate similar integrated office systems on servers that run Unix or OS/2, as well as local-area networks made by Novell, Inc. or 3Com Corp., according to HP executives.

"New Wave Office is really a tool kit for the MIS manager that can harness all those PCs out on people's desks and integrate them with the operational databases on which a company's business is based," said Doug Chance, executive vice-president of HP's Networked Systems Sector.

The New Wave interface,

Plan for all seasons

Hewlett-Packard touts its New Wave Office as an environment for multiple operating system platforms

Integrated office product	Capabilities available in 1990		
	Client focus	Server platforms	
• HP New Wave Office	MS-DOS, OS/2, Unix	Proprietary	OS/2
• IBM Officevision	OS/2	Proprietary	OS/2
• DEC All-In-1	VMS	Proprietary	—

SOURCE: HEWLETT-PACKARD CO.

CW CHART

IS in a distributed data network, Chance said. "MIS will have to manage New Wave's client-server architecture, and that will present new challenges," he said. "They'll have to make sure that security is tight, and they'll have to troubleshoot trouble on the network."

HP Chief Executive Officer John A. Young said that New Wave Office would save users money by allowing them to use their older IBM-compatible PCs in new ways.

New Wave Office packages can be ordered immediately but will not be available for shipment until May 1990.

fice compared favorably with IBM's Officevision and Digital Equipment Corp.'s All-In-1 integrated office packages, because of the high degree of open standards compliance in New Wave Office and lower anticipated costs. Still, it is hard to compare the products, because IBM's Officevision has not shipped commercially and New Wave Office will not ship until mid-1990.

Tom Willmott, vice-president at Aberdeen Group in Boston, said the average cost per user "seat" is expected to be around \$3,000 for the HP package; Officevision's price is expected to be \$10,000 per user.

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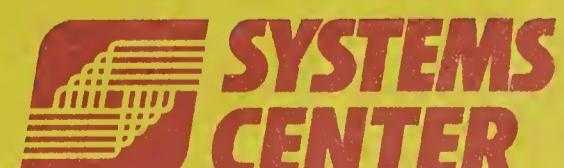
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NEWS SHORTS

Novell sets sights on the elite

Novell, Inc. is zeroing in on the Fortune 500. Last week, the network software supplier said it will expand and realign its national sales organization, creating a new arm to target major accounts. It will provide pre- and post-sales support needed by large corporate customers, Novell said. There are now three corporate sales groups: major user market support; integrated software sales; and national distribution and retail.

Sun plans gallium arsenide chip

Sun Microsystems, Inc. has signed an agreement that will result in a gallium arsenide implementation of Sun's Scalable Processor Architecture (Sparc) microprocessor design. Austin, Texas-based Systems & Processes Engineering Corp. will develop the chip from the compound, which is considered an alternative to silicon. The Sparc chips will be used by the National Aeronautics and Space Administration on circuit boards for a variety of aerospace functions.

Pentagon upgrades self-destruct

A study of eight computer system upgrades at the U.S. Department of Defense shows that they were roughly \$1 billion over budget and often three to seven years behind schedule, according to the U.S. House Committee on Government Operations. The committee's report cited "an almost total lack of accuracy in cost estimates" and said "schedule slippage is a way of life."

Kodak cuts jobs in imaging group

The ongoing corporate restructuring of Eastman Kodak Co. — part of an overall Kodak game plan aimed at giving the company a \$1 billion cash flow for the coming year — last week caused the cutting of an estimated 4,500 to 5,000 U.S.-based jobs from its recently reorganized imaging and information units. According to Kodak, the number is exclusive of work force reductions stemming from the divestitures that are also a part of the revamping of the company announced in August.

Covia looks to the East

Covia last week added Japan Air System (JAS) to its Apollo travel information and reservation on-line system. The interface will enable the 10,000 travel agent locations on the Apollo system to make reservations for JAS or Japan's two other major airlines, Japan Airlines and All Nippon Airways.

Quickmail users gain gateway

Personal computers running CE Software's Quickmail electronic mail software may get more chatty when an X.400 messaging system gateway supporting it rolls out sometime next year. Under an agreement recently announced by the software vendor and Touch Communications, Inc., Touch will develop and market the gateway. According to Touch, the gateway will provide a way for Apple Computer, Inc. Macintosh users, a large Quickmail market, to become integrated into corporate messaging schemes.

Section 1706 repeal bill introduced

U.S. Rep. Richard T. Schulze (R-Pa.) has introduced a bill that would repeal Section 1706 of the Tax Reform Act of 1986, which redefined the tax status of independent contractors. The bill (H.R. 3741) was introduced at the request of L.J.F. Enterprises, Inc.'s Lou Fanti, an independent computer consultant in Westchester, Pa. The bill was referred to the House Ways and Means Committee.

Technology agreement inked

Tandem Computers, Inc. and Nixdorf Computer Corp. last week announced a cooperative technology agreement under which Tandem will supply Nixdorf with Unix-based fault-tolerant systems, and Nixdorf will provide Tandem with Unix applications.

Texas U. works to overcome IS loss

BY CLINTON WILDER
CW STAFF

AUSTIN, Texas — One of the nation's leading information systems management graduate programs last week named a new director to replace its founder, who died recently at the age of 45.

Darwin Klingman, director of the MBA/IS management concentration at the University of Texas College of Business Administration, died Oct. 27 of a brain tumor.

He will be succeeded by Andrew B. Whinston, a professor of IS, economics and computer science who joined the Texas faculty last year from Purdue University.

Klingman pioneered the IS concentration in Texas's MBA program, a track that began in 1985 and has since graduated some 75 students.

Texas was one of 13 universities to receive grants from IBM for information systems studies in 1985 [CW, July 8, 1985], but was the only one to create a sep-

arate track within its MBA program with separate admission requirements.

The university's IS program was rated eighth in the U.S. in *Computerworld's* recent survey of the top 10 graduate programs for IS studies [CW, Oct. 30].

"Darwin took the program from ground zero to a level of really getting a lot of national attention," said Robert Sullivan, the business school's associate dean for research and academic affairs. "He wrote the original proposal that won the grant from IBM, then he implemented the program down to a T."

Corporate sponsors

Klingman helped line up several corporate partners for the program, including IBM, American Airlines, Conoco, Inc. and Andersen Consulting.

Some companies offer IS internships for students, as well as financial support to the program.

The IS concentration has greatly increased the awareness of computer technology issues throughout the university's busi-

ness school, which grants some 400 MBAs per year, according to Sullivan.

"Our marketing MBAs should be better versed than most in the use of scanner information or the implications of a centralized database," Sullivan said.

Educating for the future

Among the highlights of the IS concentration is Classroom 2000, a futuristic teaching facility in which instruction is done exclusively on 24 networked workstations. The university is currently replacing the original IBM Personal Computer AT/370s with Personal System/2 Model 70s.

Klingman, a nationally recognized expert on network optimization, taught at Texas for 20 years. He was a recipient of the university's outstanding graduate teaching award and other faculty prizes.

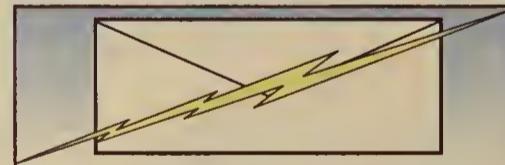
The business school has established the Darwin Klingman Memorial Scholarship Fund in his honor.

EDS

FROM PAGE 1

communicate. The company plans to use it to integrate disparate E-mail systems for other clients in addition to GM, Kugel said. Diamondnet also provides a directory of E-mail addresses and bridging to public services so that GM users can exchange documents with business partners who are not directly linked to the auto maker, Flynn said.

While Diamondnet adequately solves one aspect of GM's incompatibility problems, EDS has determined that a corporate



wide migration to industry standards represents a more long-term, efficient solution for GM. An early phase of this strategy, now under way, is to make CCITT X.400 the common format for interconnecting different E-mail systems at GM. Diamondnet's translation software will still be needed, at least for a time, to connect systems that do not yet comply with the standard.

EDS is "not just sitting on the sidelines waiting for vendors to answer our prayers" by migrating to X.400, Flynn said. "Sometimes we say, 'If you don't conform [to X.400], we won't do business with you.'

EDS is not taking that kind of hard line with IBM, even though the computer vendor has yet to announce X.400 support for its

Officevision. A huge installed base gives IBM an almost privileged position at GM, Kugel said. "We believe Officevision and Profs will stay: They are a big part of our community."

EDS is currently experimenting with prototypes to link IBM's "tower" of proprietary protocols with the comparable OSI tower, Flynn said.

The systems integrator has taken a two-pronged approach to the problem of standards implementation. It is aggressively pushing all of GM's computer vendors, including IBM, to speed up their migration to the standards. IBM has admitted the importance of OSI and promised that the standard will become a native part of its system "but won't say when," Flynn said. "GM will

have two standards through the 1990s: IBM and OSI."

The second prong of EDS' strategy involves developing translators along the lines of Diamondnet, one that is standards-based and covers a much wider spectrum of communications functions. A pilot system now being tested allows various systems to move spreadsheets, text and graphics in revisable formats out of a proprietary environment into a standard applications environment, Flynn said.

EDS also hopes to reduce the number of proprietary protocols used at GM from the current count of 13. However, the company plans to preserve other proprietary systems besides IBM's, which provide "the best solution for a given problem" at GM, Flynn said.

IBM eyes employee cost cutting

ARMONK, N.Y. — Officials at IBM last week confirmed reports that it is trying to reduce employee-related costs but will stand firmly by its 40-year-old policy of no forced layoffs.

IBM's traditional cutback strategies of early retirement packages, redeployment and nonreplacement of exiting employees are likely to continue in 1990, one Wall Street analyst said. The company refused to speculate on such moves.

"All you have to do is look at IBM's financials," said Sanjiv Hingorani, a computer industry analyst at Salomon Brothers, Inc. in New York. "IBM's earnings peaked in this decade at \$10.77 per share in 1984, and their stock is at its lowest level since 1985."

Hingorani said that IBM is finalizing its 1990 budget, and any cost-cutting action the company might take would be "pure speculation, because without the budget in place, the company doesn't know yet exactly what measures will be necessary."

Hingorani does not see any basis for recent Wall Street rumors that the company is planning to cut its 387,000-person work force by as many as 15,000 jobs.

However, reports of such a cutback — possibly occurring this week — persisted.

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User gains likely as DEC seeks to halt turf wars

BY MARYFRAN JOHNSON
CW STAFF

ORLANDO, Fla. — In a move designed to cut conflicts within its own sales channels, Digital Equipment Corp. last week announced a program that offers customers greater negotiating

power and broader choices when buying DEC equipment.

The new sales program, introduced at DEC's 1989 Complementary Solutions Organizations Executive Seminar, is a share-the-wealth deal intended to end the turf wars between DEC's direct sales force and

third-party vendors.

The cease-fire should mean "good news to end users," said Fred Koehne, president of McLean, Va.-based PRC Public Management Services, the largest vendor of criminal justice and emergency dispatching systems in the U.S. and Canada.

"When both sales reps get 100% credit [for a sale], they're not working against each other," Koehne explained. "They're working for the customer instead."

Whether customers buy directly from DEC or from a third-party vendor, under the new

sales plan, the credit for that sale — in the form of future discounts — will be equally shared by both companies. Under the old system, whoever made the final sale got all the credit.

During the annual meeting, DEC officials apologized for the second-class treatment of their resellers in the past. An estimated 40% of DEC's annual sales come through third-party channels.

"Did we bite the hand that fed us? You bet your life we did," said Jack Smith, senior vice-president of engineering, manufacturing and product marketing at DEC.

Resellers and DEC officials stressed that customers will be the ultimate beneficiaries of improved sales force relationships in the form of better service. No promises of big discounts were forthcoming, however.

Bad news

There was bad news from the reseller's point of view in what some saw as a growing trend toward customers buying unbundled systems — shopping around for the cheapest hardware to pair with customized software.

"This has the potential of a serious threat to our revenue," Koehne said. "We've had four customers in the last year who went unbundled, and we ended up losing money."

Both DEC officials and resellers complained about having to "rescue" customers who had botched their own systems integration projects. Smith said DEC is about to start charging extra fees to customers who call them in for help.

Several business executives also grumbled about a \$1 million "cap" that DEC is slapping on the sales credits they can accrue toward future discounts. The cap was taken by some as a message that large corporate customers are out of bounds for third-party vendors.

Smith responded that the dollar limit was still "under review." However, he emphasized that the complexity of large corporate sales called for direct handling by DEC.

In private sessions with DEC officials, the business partners and resellers asked for more timely competitive sales information, quicker access to DEC sales representatives and stronger support in the field.

Barbara Dotson, president of DWC Computer Solutions, Inc. in Lexington, Ky., said software vendors selling DEC-based products have come to expect little help from company sales representatives.

"Those IBM people are in there fighting with their resellers, showing that software on their machines," Dotson said. "With DEC, you're lucky if you can get the machine fixed after it breaks down during the demo."

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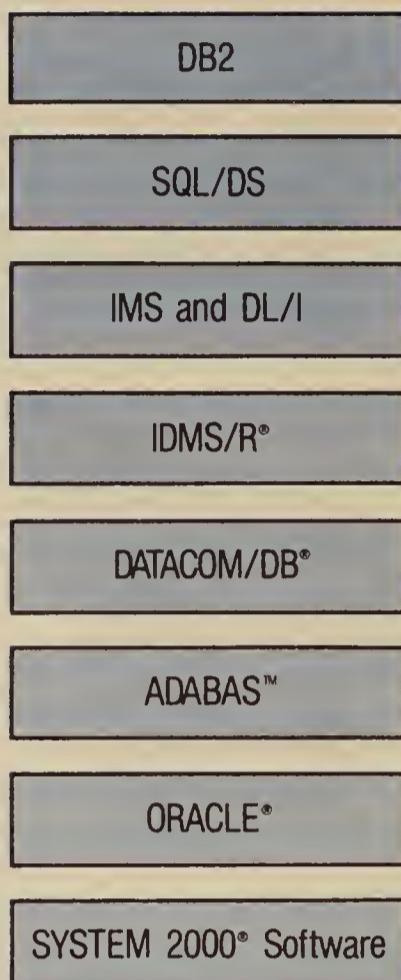
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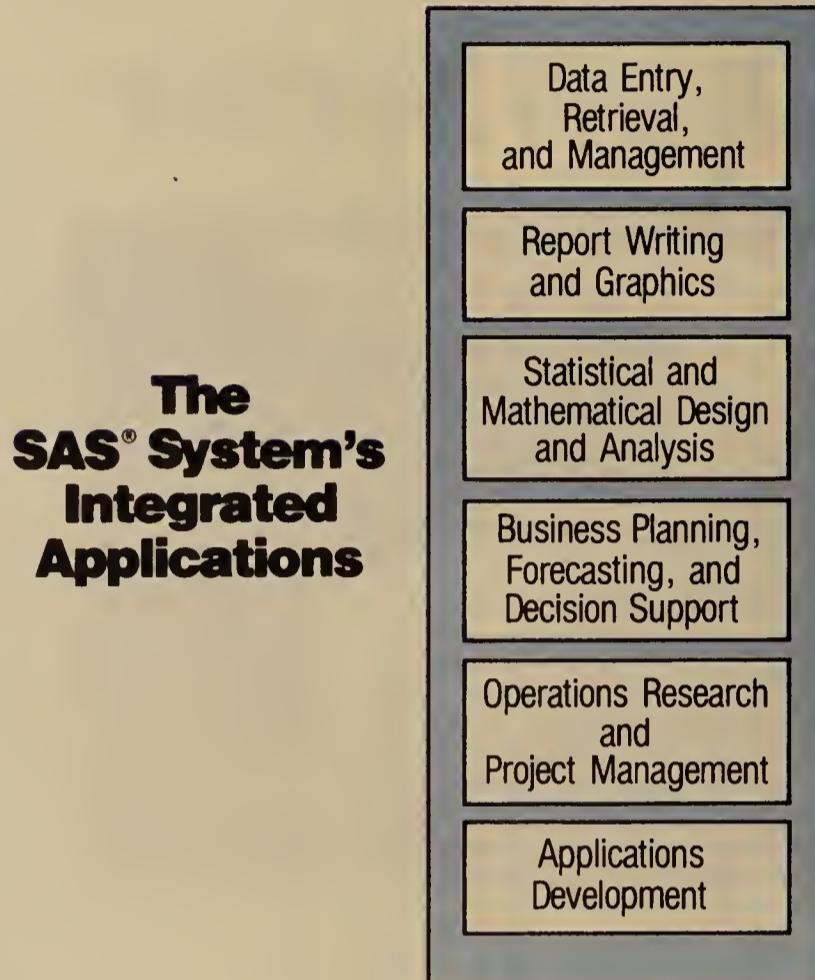
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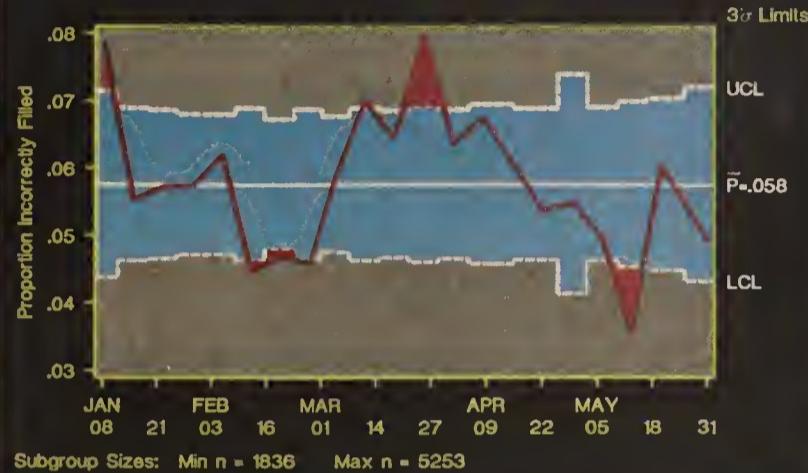
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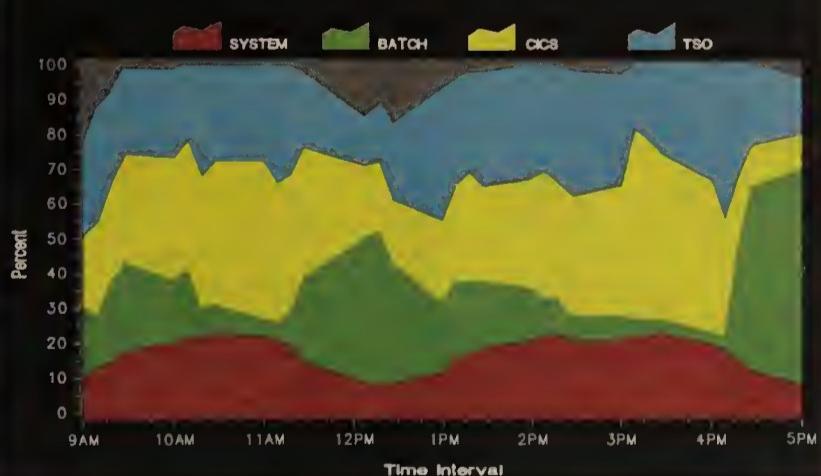
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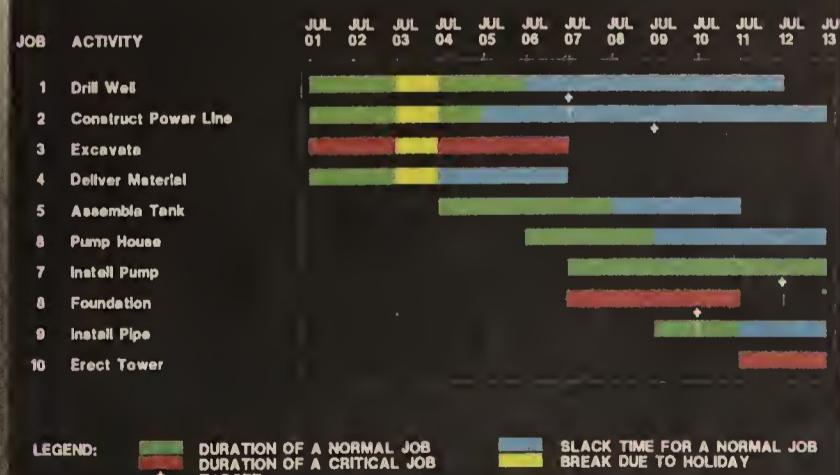
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Central IS role not likely to fade soon

BY CHARLES VON SIMSON
CW STAFF

Information systems directors nervous about the recent elimination of a central IS function at Kendall Co. are best advised to relax. A few notable examples notwithstanding, the trend in

major organizations is for a strong central IS presence, even in the most far-flung organizations.

A survey of 243 U.S. IS executives and 92 of their European counterparts to be published at the end of this month by Index Group, Inc., a Cambridge,

Mass., consultancy, indicates that few are worried about the dissolution of their responsibilities.

Eighty-two percent of the Americans and 73% of the Europeans felt strongly that their organizations will continue to have a central IS function through the

year 2000. Only 9% of the Americans and 10% of the Europeans thought it likely that their organizations would eliminate the central function.

"Most of the Fortune 500 have at least one corporate mainframe center," said Leonard Bergstrom, a principal at Darien, Conn.-based Real Decisions Corp., an IS cost consultant to Fortune 250 companies.

"If anything, they are moving toward consolidation to get increased economies rather than the other way. Any company eliminating central IS is bucking a strong trend."

Kendall became a dramatic exception last month, however, when the firm eliminated its central IS group and contracted out the remaining central IS functions to a start-up consulting firm headed by outgoing corporate IS director Ron Cipolla [CW, Nov. 13].

Observers contend that a centrally managed IS organization is important for more than simply keeping track of network installations.

"If you believe there is any point to being a corporation, rather than just spinning off all units into legally separate companies, it must be due to some synergy in the lines of business," said Michael Packer, vice-president and IS specialist at the MAC Group, a Boston-based management consultancy. "Information is part of that. I would be amazed at a company that would not have some kind of centralized group maintaining standards and volume purchase agreements."

Pepsi's standards

One such company maintaining corporate standards in a decentralized environment is PepsiCo, Inc. MIS director Allen Deering coordinates corporate volume purchase agreements and helps autonomous business units such as Taco Bell and Kentucky Fried Chicken arrive at standards. Deering, however, enjoys no veto power over any unit's plans and has direct responsibility only for the data processing function of the administrative center in Purchase, N.Y.

"You have seen the notable exceptions that have dropped off the face of the earth," Bergstrom said. "With increased acceptance of outsourcing and other distribution options, there may be more of it in smaller organizations. The disappearance of central IS puts the burden on the profit centers, which can be attractive from a cost point of view."

Among the notable exceptions are some big names in the industry.

Restructuring at Fidelity Investments, Inc. two years ago handed virtually all systems development down to the operating units and caused the departure of then-IS chief Michael Simmons, who ultimately became MIS director at the Bank of America.

Within the last year, Richard Koeller, former MIS director at TRW, Inc., left the company, reportedly over disagreements about the role of a central IS director, and is now head of IS at Whirlpool, Inc. Both Simmons and Koeller declined to be interviewed.

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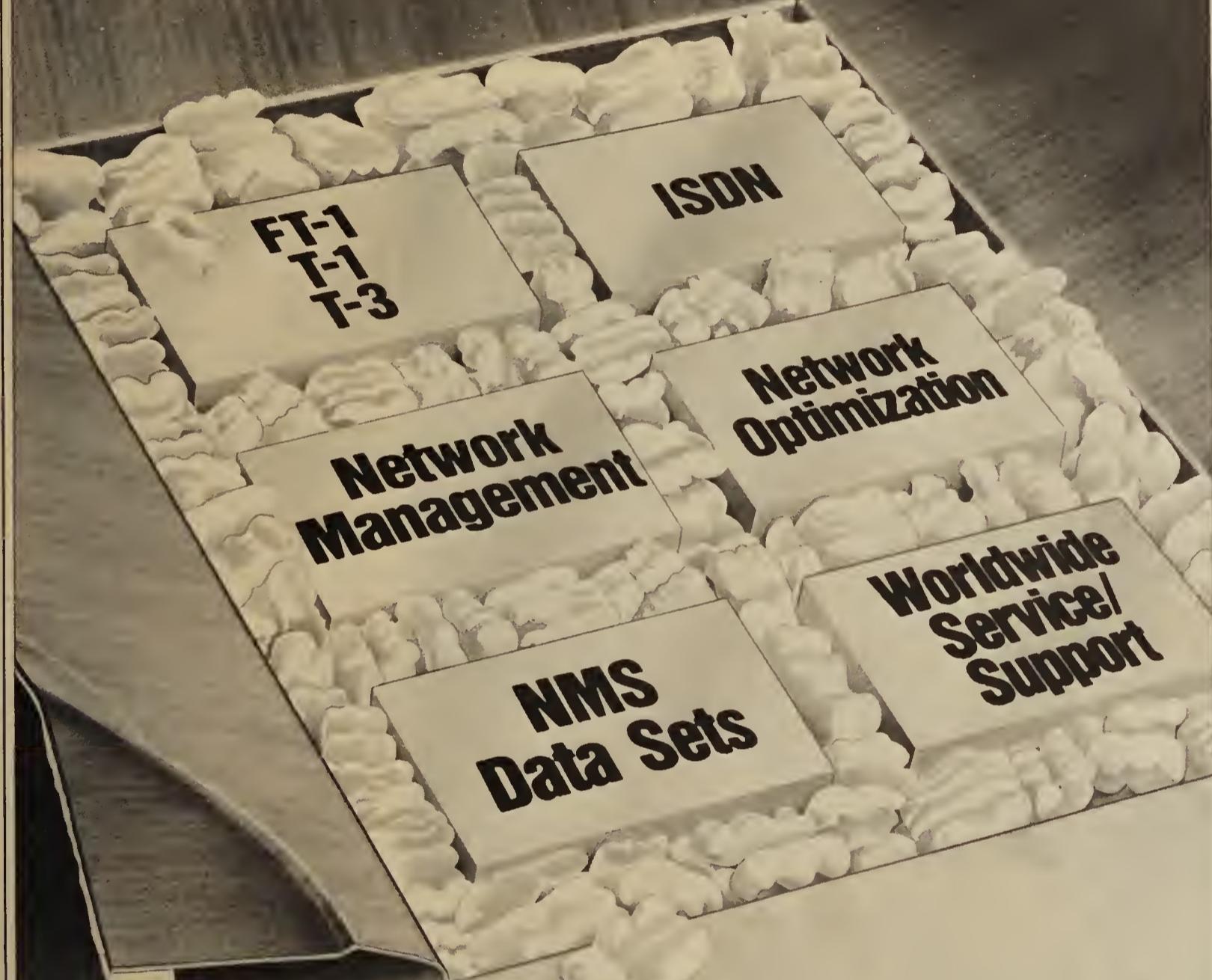
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General DataComm

Military contracts for 'teraops' system

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The U.S. Defense Advanced Research Projects Agency (DARPA) last week awarded Thinking Machines Corp. a \$12 million contract to develop a working model of a supercomputer roughly 1,000 times more powerful than those currently available.

The system, code-named Mega, will use Thinking Machines' massively parallel architecture and will be capable of peak speeds greater than one trillion operations per second. (That speed, known as 1

teraops, is equal to 1,000G floating-point operations per second, or FLOPS.)

Under the DARPA contract, the Cambridge, Mass.-based firm will "scale up" its Connection Machine 2 (CM-2) to produce a one-tenth scale version of the teraops machine, according to Danny Hillis, co-founder and chief scientist at Thinking Machines. The final demonstration of the working components will be in 1992.

Hillis declined to discuss the exact architecture of the proposed teraops supercomputer, except to hint that there is an opportunity to speed up the CM-2 processors. He stressed that the teraops system

will run all of the software written for the CM-2, which typically runs at 8G FLOPS.

"As it turns out, CM-2 was a scale model for teraops," Hillis said at a press conference here.

Thinking Machines will be matching the DARPA contribution of \$12 million and has already spent \$10 million on the preliminary designs. Hillis said the biggest remaining technical challenge is designing the teraops machine with fault-tolerant capabilities.

DARPA and Thinking Machines officials emphasized that the goal of developing a teraops supercomputer was en-

dored by the Bush administration's report on high-performance computing [CW, Sept. 18]. The report said high-performance supercomputers are needed to solve some of the nation's most pressing "grand challenges," including research on superconductivity, global climate changes and automatic speech recognition by computers. DARPA officials suggested there will be more supercomputer contracts with other vendors forthcoming but declined to identify them.

EDI firms forge global alliance

BY JOANIE M. WEXLER
CW STAFF

EL SEGUNDO, Calif. — More business forms could wind up in circular files around the globe as a result of an alliance announced today between international services provider Infonet and six worldwide suppliers of electronic data interchange (EDI) products and services.

EDI is the computer-to-computer communication of business documents, such as purchase orders, via standardized electronic message formats. The process allows companies to conduct business with suppliers and other trading partners without producing or transporting paper documents.

Allied with Infonet are Railinc, a Washington, D.C.-based supplier of EDI links to the North American transportation industry; Supply Tech, Inc., a Southfield, Mich., vendor of EDI translation software; Telecom Australia; Hong Kong's Cable and Wireless; Singapore Network Services; and Telefonica Spain.

Infonet, which offers value-added, standards-based network services in 34 countries, is majority-owned by the Postal Telephone and Telegraph authorities (PTT) of major European and Asia Pacific countries.

The agreement allows the customers of all the allied EDI providers to exchange documents with one another via the Infonet network.

"It's becoming common for companies using EDI, such as Ford Motor Co., to refuse to do business with suppliers who don't have EDI capabilities," said Vic Wheatman, program director for interenterprise systems at Gartner Group, Inc.'s Santa Clara, Calif., office.

Translation key

Supply Technology's translation software is a key component of Infonet's global EDI network, converting "flat files" of straight data created by a user's applications software, such as a purchase order system, and putting it into an agreed-on format that is sent via communications software to the trading partner.

The software can be installed on the users' computers, or the translation can take place on the network, for a service fee ranging from 5 to 30 cents per document, according to Laura Andrus, Infonet's director of marketing.

Andrus added that the company is encouraging users to install their own translation software, which she said ranges in price from \$20,000 to \$40,000 for mainframes, \$8,000 to \$30,000 for minicomputers and \$500 to \$8,000 for microcomputers.

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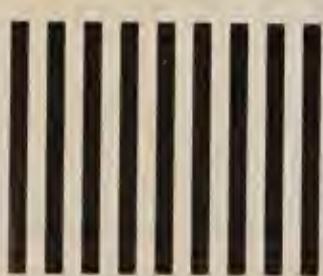
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Morris seeks classified data

BY MICHAEL ALEXANDER
CW STAFF

SYRACUSE, N.Y. — The trial of Robert T. Morris Jr., the young hacker alleged to have launched a worm into Internet last year, was postponed last week after his lawyer notified the court that he needs access to classified information he claimed is critical to the case.

Additionally, Morris' lawyer, Thomas Guidoboni, charged that the government had not responded quickly enough to requests for a list of computer sites allegedly struck by the worm.

"The trial was postponed at my request over government opposition because we needed more time to prepare," Guidoboni said.

In a motion filed Nov. 21 for a continuance, Guidoboni said that the defense had filed a motion under the Classified Information Procedures Act (CIPA) requesting classified information important to the case. In the same motion, Guidoboni said the government had failed to provide him with a complete list of institutions that the government intended to prove had been affected by the worm and a list of witnesses it intended to call.

"I have been told that some information that is useful to my defense is classified," Guidoboni said. "It may or may not be. I don't want to either overplay it or belittle it, but we needed some time to get that worked out."

"Less than two weeks before the trial [on Nov. 20], the government added new names to the list that were not mentioned in the indictment as well as filed a motion to withdraw one of the original names mentioned," Guidoboni said. "I wanted time to look into that."

In opposition to the motion for a continuance, government lawyers said that the national security issues raised in the CIPA motion were being resolved and would have no effect on the defense's ability to proceed or on the timing of the trial.

Responding to the issue of not having responded in a timely manner to the defense's requests for a list of victims or witnesses that it intended to call,

"the government has complied with all court orders to provide discovery," said Mark Rasch, trial attorney for the Justice Department. In addition, the defense has had ample opportunity to request and receive additional information related to the case, he said.

The government is seeking in a motion to remove the U.S. Air Force Logistics Command at Wright Patterson Air Force Base in Dayton, Ohio, from a list of four computer sites mentioned in its July indictment as having been allegedly hit by the worm.

Rasch declined to comment on why the government desires to remove this particular site from its list of victims, while adding that it intended to offer evidence on 16 sites in all.

Guidoboni filed an objection to that motion last week, and a decision is pending.

Last week, U.S. District Judge Howard Munson agreed to continue the case to the week of Jan. 8. A new trial date has not been set.



Trial for Morris
(above) postponed

Security experts snipe at military guidelines

BY JAMES DALY
CW STAFF

PALM SPRINGS, Calif. — Information systems managers who steer their security plans by the document considered the beacon of the computer security community may in fact be heading for the shoals of disaster.

Experts at last week's Infosec '89 conference came down hard on the deficiencies of the Department of Defense's "Trusted Computer System Evaluation Criteria," commonly known as the Orange Book, which serves as the de facto guideline for the computer security community.

"As good as it is, it is fundamentally flawed," said Peter Neumann, a member of the computer science laboratory at SRI International in Menlo Park, Calif.

Neumann criticized the Orange Book for making short shrift of vital areas such as virtual systems, networking, applications software and information integrity.

The Orange Book divides

computer systems into four hierarchical categories of security protection, ranging from D at the low end to A at the high end. Each level is further subdivided and given a numerical equivalent.

Although the criteria are clearly spelled out, analysts said vendors often play fast and loose with their supposed adherence to the guidelines. "It is what we like to call criteria creep," said Stephen Walker, president of Trusted Information Systems, Inc. in Glenwood, Md.

Government officials said it is important that users do not get caught up in these muddy waters. "There is no assurance that products advertised as 'C-2-like,' 'designed to meet C-2 requirements,' or 'targeted at C-2' actually provide the features and assurances of that level of trust," said Thomas Malarkey, deputy chief of the National Computer Security Center's product evaluation division, which awards Orange Book ratings after a lengthy evaluation process.

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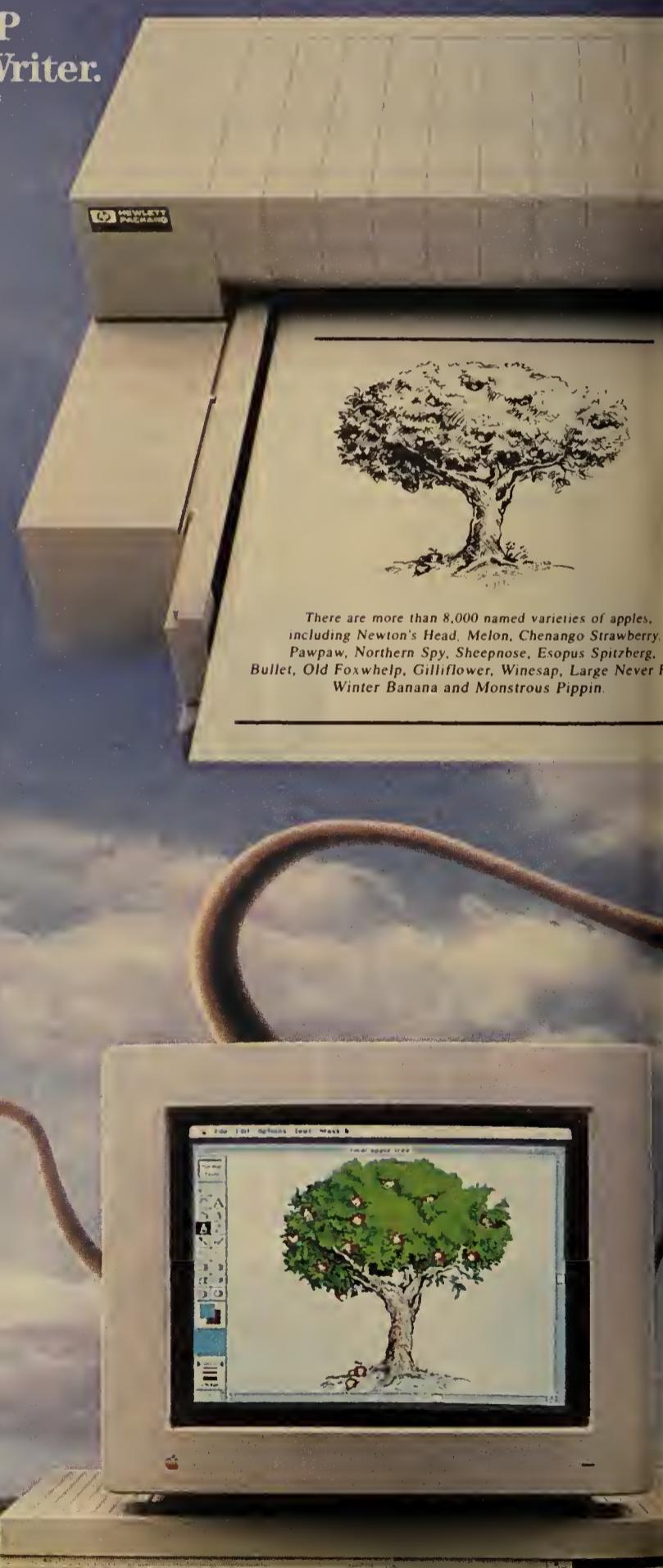
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EDITORIAL

Warm fuzzies

FEW THINGS CAN inspire more angst in a user than hearing these three little words from a key software supplier: "We've been sold." A multitude of nightmares leap to mind: loss of support, less frequent enhancements, bureaucracy and, worst of all, outright cancellation of the product.

IS managers with large mainframe installations have been hearing those three little words a lot over the last six years. From Computer Associates' often ruthlessly efficient cost-cutting to the benign equity investments of IBM, consolidation in the mainframe software industry has been fast and furious, taking many of the major players of the early 1980s with it.

So it is surprising that Dun & Bradstreet's acquisition of Management Science America last month did not arouse more nervousness among MSA users. Three years ago, the sale of such a large and important vendor would have had the industry buzzing with anticipation of layoffs and butchered research and development budgets. But the users we talked to seemed positively unexcited about the whole thing. Why?

One explanation is that the industry has learned a lot about itself in the six years since D&B kicked off the mega-merger craze with its acquisition of McCormack & Dodge. The industry has learned that host software is not a commodity. Scrapping a mainframe database management system takes customer companies down with it, and increasingly militant users are less inclined to stand for that kind of neglect. CA learned as much two years ago when it proposed to discontinue a mainframe security system and had to withdraw the plan quickly in the face of user outrage. In contrast, D&B took pains last month to stress that the MSA acquisition would have no effect whatsoever on product lines.

The industry has also learned that the nature of a software company's relationship with its customers is unusual — almost personal. Time after time, users tell us that what they like about small software companies is the individual level of service and support they get.

The big players are evidently aware of that fact. Legent typically trundles the executives of acquired companies around the country to bless the union in front of customers and the press. D&B learned that the best way to treat its M&D subsidiary is to leave it alone. IBM has apparently given up on big-ticket buyouts and seems content to invest in small vendors that meet with its approval rather than overwhelming customers with bureaucracy and blue suits.

Finally, users are realizing that vendor stability is in their best interest. Software is no longer a garage shop industry, and a vendor's alternatives to being bought out are often financial hardship or worse. A cash injection from a well-run suitor can be a welcome relief to vendor and customers as long as the acquiring firm understands that users chose to do business with the company being bought, not the buyer. Increasingly, the goal of the would-be acquisitor is to keep customers feeling warm and fuzzy.



LETTERS TO THE EDITOR

The danger in viewing the hacker as scapegoat

As a member of the data processing community and a loyal reader of *Computerworld* for the past 11 years, I feel that I must comment on "The hacker as scapegoat" [CW, Oct. 23].

The issue of how to deal with hackers does, in fact, need to be addressed by our industry. However, Steven Levy seems to think that gaining access to a computer is a personal freedom and that we as an industry owe him and the likes of Robert Morris a hearty "Thank you!" for showing us any possible weaknesses in our network security systems. I liken this to me thanking the person who breaks into my home for showing me that my windows can be broken or that my alarm system can be circumvented.

The fact of the matter is that hackers have absolutely no right to gain access to any computer system without the express consent of the owner(s) of that system. Anything else is trespassing at least and, at most, felonious.

It seems that publishing such tripe borders on irresponsible journalism, considering all the man-hours that hackers have caused DP professionals to spend guarding their systems against worms and viruses, and the resultant impact on budgets, schedules and so on.

William R. Wallen
Senior Database Analyst
Commerce Bank of Kansas City
Kansas City, Mo.

Steven Levy's argument — that hackers act for the challenge and the sake of doing something that was apparently impossible to do — is baseless. One could draw parallels to someone breaking

into Levy's home because it appeared to be impenetrable.

This person, who had broken into Levy's home, would not break anything but would merely rifle through his drawers, look at his personal possessions and then leave.

In that nothing was broken except the security of Levy's lock, if we used Levy's logic, we would probably classify this as a good break-in.

The point is that what a hacker is breaking into is someone else's property. It was not intended for them, nor were they intended to be there. To trespass on someone else's property, whether it be electronic or physical, is breaking the law. Deeper than that, it transcends the law into areas of ethical and even moral behavior.

The only difference between a hacker and nonviolent break-in artist is that the hacker holds himself out to be an intellectual.

Michael A. Kistner
Aberdeen, S.D.

Welcome to the bandwagon! In an otherwise helpful and informative issue, you just had to publish "The hacker as scapegoat," an interview justifying (and glorifying) the hacker.

If, as Steven Levy implies, system managers are to blame for hacker intrusions because their systems security is less than complete, then I assume he would also blame me for any assault committed upon me because I chose not to arm myself and confine myself to a steel box.

Using phrases like "never stoop to malicious methods to practice the darkest sides of their art" and "Honor is something that is alive in hacker com-

munities," Levy demonstrates that writers of fiction often have difficulty understanding reality. The reality is that entering a computer system without authorization is against the law, and the people who do so are criminals — just as people who enter your home without authorization are criminals.

Now, while I have no sympathy for security practitioners who fail to take basic steps to protect their systems, I would no more blame them for getting hacked than I would blame the victim of a burglary for failing to bar the windows on his home.

Levy also demonstrates his difficulties with reality in his definition of a hacker — "a person whose devotion to something is near total and who has a deep-seated desire to do what's impossible to do." In the real world, those of us confronted with the problems caused by hackers have a different definition. Any person who deliberately gains unauthorized access to a computer system is a criminal and ought to be viewed as one and treated as one.

Finally, leave the glorification and romantic portrayal of criminals to works of fiction. It has no place in industry journals or news publications.

John A. Blackley
Security Administrator
Capital Holding Corp.
Louisville, Ky.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.

Words brew anti-Japan typhoon

CHARLES P. LECHT

 We're going through a period where everyone and his brother, including the Japanese, seems to be offering advice on how to do business in Japan. In the worldwide computer industry, the advice-giving may be stronger than anywhere else; no other field is growing so fast, in no other field is the competition as fierce, and in no other field have foreign companies locked themselves out of Japan so well.

Consider this startling fact: Even if Japan opened its borders to all foreign computer companies, with no customs duties levied on imported products and free transportation to anyone willing to ship them here, Japanese industry would still have little choice but to continue to buy homegrown systems. Except in the case of one foreign manufacturer — notably, IBM — foreign-made systems cannot be easily used in Japanese business. They cannot handle the most fundamental requirement that a Japanese business system must have: the capability to process the Japanese language.

Threats by the U.S. Commerce Department or the European Economic Community to

Lecht is an IDG News Service correspondent based in Tokyo.

enact radical legislation to thwart Japanese business abroad because it is too protectionist at home become suspect in the face of this basic fact. The capability of Japanese-made systems to process the languages of all the complaining countries makes their complaints appear even sillier. What are the Japanese supposed to do, stop speaking, reading and writing Japanese?

So, in place of using their energies to overcome this difficulty, the complaining foreign firms are spending their energies waging a trade war with words. The words have the potential to change what is now a lot of hot air into tomorrow's Pacific techno-economic typhoon and the destruction that may bring.

Of course, the trade complaints against Japan encompass much more than computer systems issues, and some have merit. But the computer industry should not be held hostage to, say, the meat or rice lobbies, which are trying to broaden their businesses at our expense. Do you think that information systems costs should be increased because some rice farm in California can't make it into the Japanese marketplace? I say no.

The foreign cries of "foul trade practice," needless to say, bring out the worst in Japanese politicians and businessmen. The most unwise of the local experts seem to be advocating Japan's independence of foreign markets — kind of like killing

the goose which they seem to have forgotten laid the golden egg on Japanese shores.

The most unwise of the foreign experts continue to press for certain embargoes on high-tech products from Japan. They

some torch to burn to prove their superiority and those foreigners, mostly Americans, who feel the need to retaliate in kind. Both are blowing up a typhoon of belligerent words. All but a very few have one thing in common: They have few qualifications to make these judgments.

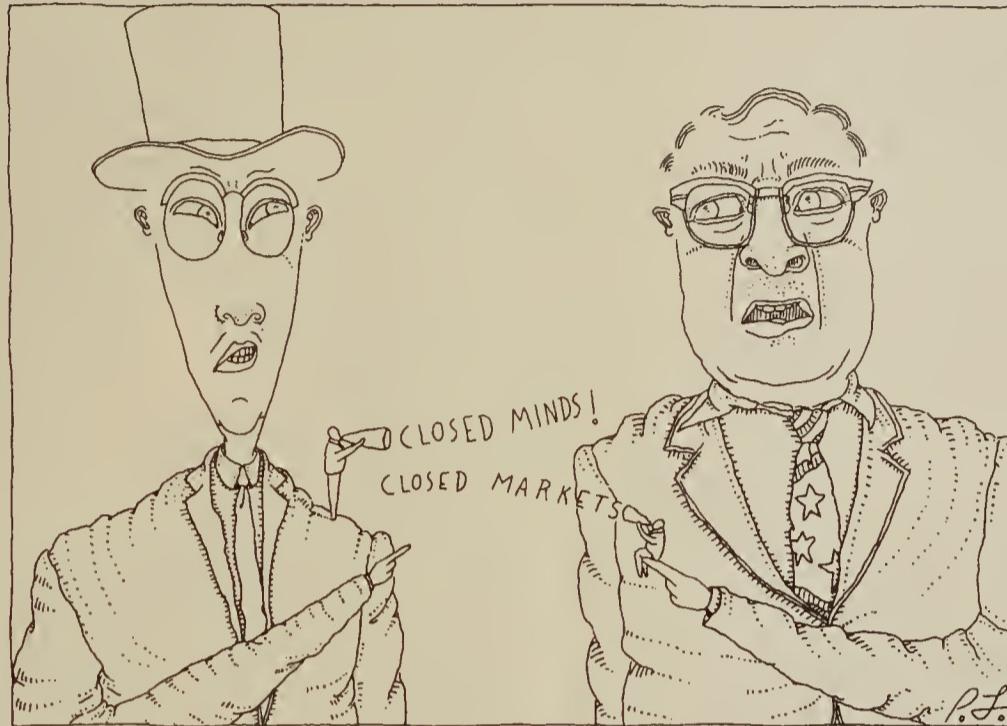
Japanese and foreign media alike abound with sensationalist

tions, in turn, feed the professional doomsday preachers who warn both the Japanese and foreign publics that there's skulduggery afoot, and something ought to be done about it.

The sad part of all this is that the Japanese and foreign businessmen who work together daily in the trenches of Japanese business have to deal with it.

They both know that things are different here in Japan, so why should anyone be surprised about this? It is not Italy, France, the USSR or the U.S.; it is Japan. Japanese, rarely understood by foreigners, is the spoken and written language here. Society has some very fundamental value differences. However, these need not create a typhoon; they can be enriching.

The growing winds of antiforeign/anti-Japanese newspaper reports and TV documentaries that have been blowing lately can serve little purpose but to undermine our mutual solid business foundations — foundations Japan and the U.S. have so carefully built since the end of World War II. We can only hope that the winds do not herald the arrival of a typhoon from which we may not be able to recover.



PAUL FISCH

appear to want to shut the doors of the factories they helped build and from which they obtain their supplies, just to teach someone a lesson.

The opinions of these Japanese "experts" cannot help but appear to me as the bought and paid-for smirks of an insincere waiter. The most vociferous of these advice-givers seem to be Japanese executives who have

and often banal stories on Japanese business — stories that reveal deeply prejudiced and pre-programmed opinions that employ onerous national and racial stereotypes to make their points. These, too often, provide the fodder sought by many editors to curry favor from the media-buying public unaware of the truth regarding Japan and its relationships abroad. Their eman-

New day dawns in age of U.S. foreign competition

MARTY GRUHN

 Like many people in the computer industry, I have been watching the influence of offshore firms with a growing sense of unease. On the one hand, I am a child of laissez faire. I drive foreign cars and believe that the best product should always win. On the other hand, I am concerned that U.S. computer companies are irreversibly falling behind.

As the computer industry rolls into a recession, this concern takes on new dimensions. Clearly, our industry is downsizing, and every participant is being affected. Automation is eliminating jobs in manufacturing. The march of price/performance means that fewer people are needed to market, sell and ser-

vice less expensive computers. In fact, many pundits believe the computer sector is entering a period of maturity analogous to the automobile industry. In this future scenario, there will be a handful of giants supported by a plethora of small companies that specialize in market niches.

The question is, of course, who will be the giants of the next computer era? Look at the classified ads today and you might get a clue. While U.S.-based computer suppliers are laying off people by the thousands, Japanese-held companies are notable for their hiring activity. Recent employment advertisements by Hitachi, Toshiba and NEC all point to their continued investments in the U.S. market. Given the layoffs by U.S. companies, they will have a long roster of first-rate people from which to choose.

The challenge to U.S. computer manufacturers is further underscored when one observes the quiet revolution taking place in the venture capital commun-

ty. Sources indicate that rather than retreating from new investments, venture capitalists are continuing to fund high-technology start-ups. However, much of this capital hails from Japanese and Asian companies, which are investing in fledgling start-ups developing technologies that will be intrinsic to success in the next decade. They are not only making the investments necessary to become the powerhouses of the computer industry in the future, they are willing to make them in the worst of times.

Three little culprits

So we must ask this question: Why are U.S. computer companies finding it difficult to compete? One reason is governmental policies that do not protect U.S. businesses from unfair competition and a lack of cooperation between government and industry that is typically found in other countries. Our tax laws also do little to incite strong capital investment. However, there is a third culprit that is also responsible. It is Wall Street, which makes the computer industry dance to its collective tune.

Face it — Wall Street runs on smart money, and sales and

earnings are the name of the game. When computer companies report successively higher sales and earnings, Wall Street applauds by raising the value of the stock, and management and employees feel that they win. When there are shortfalls, however, investors unload the stock with a vengeance and recriminations are swift and sure. Consider the applause that surrounded industry stars such as DEC, Apple and Sun Microsystems. Then look at the response when they hit bumpy roads and quarter-to-quarter windfall sales gains could not be sustained.

When U.S. computer manufacturers dance to the tune of Wall Street, an insidious problem occurs. Quarterly performance takes the place of the long-term view, and companies are loath to report reversals while new strategies go into effect.

To "make the numbers," vendors throw sales forces into a frenzy at the end of each quarter and pursue self-defeating price wars to gain market share. In the worst case, we have situations such as Miniscribe's, in which management is alleged to have cooked the books to make the numbers add up. In the best case, we have firms such

as Data General, which have set their stakes in new products and strategies for the long term and are willing to take their lumps while Wall Street fumes.

And what about Wall Street and Japanese and other Asian competitors? Unlike their U.S. contemporaries, Asian competitors can largely ignore Wall Street. They draw from a well-spring of management and investment philosophies that value long-term success over whimsical performance. These firms' long-term orientation is supported by their government and private sectors. They are the firms investing in the computer industry today, while U.S. firms struggle to make the numbers despite an obvious computer recession.

In the final analysis, there is a lot more wrong with the computer business than downsizing and the effects of price/performance. To be competitive, the U.S. computer industry needs to make the emotional and financial investments that will be necessary to be competitive over the long term. To do so, it will need more pragmatic partners in the government and in the financial community. Wake up and smell the coffee, folks.

Gruhn is a consultant and former vice-president of the Sierra Group.

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SYSTEMS & SOFTWARE

SOFT
TALK

Amy Cortese

Unix walls coming down



We live in interesting times. The physical and ideological walls that have separated East and West Germany are being torn down, and people are talking of reunification.

Closer to home in the software industry, other walls are coming down. OK, the renewed call for unification of the Unix industry doesn't compare with the possible end of the Cold War — but it is intriguing.

Battle weary, the Open Software Foundation (OSF) and Unix International (UI) have reached an apparent rapprochement. And AT&T, long the Unix sentry, is holding open the doors of its Unix Software Operation to friend and foe.

In an attempt to dispel, once and for all, any perceptions of self-interest, AT&T's Robert Kavner has initiated discussions with members of both OSF and UI, centering on the creation of a Unix business owned by companies with a vested interest in the operating system. The dis-

Continued on page 32

Inside

- SSA wields CASE tool for AS/400. Page 25.
- Distributed databases projected to mean multimillions by 1993. Page 25.
- M&D announces plans for inventory control. Page 26.

ON SITE

BY JEAN S. BOZMAN
CW STAFF

SAN MATEO, Calif. — Visa USA, Inc. claims it has a formula for success in information systems planning — and that formula is "n + 1."

The "n + 1" formula means that redundancy is built into Visa's entire credit authorization and clearing network. It means there are duplicate mainframes, duplicate network pathways, duplicate network terminals and duplicate power supplies. There is also a duplicate data center in McLean, Va., that handles half of all Visa



transactions and acts as an emergency backup to the primary data center here.

Uptime is critical to Visa, which provides credit-authorization services to 19,500 member banks around the world and competes with services provided by American Express Co., among others. Last year, Visa, with more than 200 million cardholders, cleared more than \$209 billion in transactions stemming from sales at more than seven million retail outlets worldwide. Visa says its credit-card clearing operation, which is owned by its member banks, represents nearly half of the global credit-card market.

This year, overseas sales vol-

umes outstripped those in the U.S., forcing Visa's IS to expand its base of data centers in London, Hong Kong, Singapore and Sydney, Australia. "In the next three to five years, we will be seeing more computer centers located outside the U.S.," said Rosalind Fisher, executive vice-president at Visa USA, who directs Visanet IS. "That means our architecture will have to be flexible enough to provide the kind of availability we now get from our two U.S. data centers."

Redundancy and flexibility go together at Visa, since the net-



Visa's Fisher seeks flexible architecture

work may have to be reconfigured on the fly, as it was during the Oct. 17 California earthquake. The McLean center took over control of Visanet for several hours, while the San Mateo center was checked for earthquake damage. Then, San Mateo took over for McLean the next day when thunderstorms threatened East Coast communications lines.

To protect against damage from earthquakes, Visa's processing center here is anchored to bedrock 40 feet beneath the surface.

The center happens to be located, after all, just a short distance from California's infamous San Andreas Fault.

The Bay Area earthquake
Continued on page 29

Amdahl drops entry point for MDF multiprocessor

BY J. A. SAVAGE
CW STAFF

SUNNYVALE, Calif. — Amdahl Corp. recently lowered the price point to access its 14-subset Multiple Domain Feature with the introduction of a new multiprocessor that is scheduled for February availability.

The company also said it would increase the density of its static random-access memory (SRAM) chips to double main memory on its high-end series, the 5990s.

The ability to partition a multiprocessor into 14 separate working units "can save a ton on software costs," in comparison with running copies of software on several machines, according to Tom Moore, Amdahl's 5990 marketing manager.

While that degree of partitioning has been available on two higher level machines, which are priced beginning at \$9.8 million and \$11.8 million, the new 5990-790 will start at \$7.5 million, Amdahl said.

Reduced overhead

Amdahl also claimed to have reduced overhead tied to the company's Multiple Domain Feature with a "scheduler" to simplify allocation of processing time between partitioned CPUs relative to changing work load.

This extension to the Multiple Domain Feature will be available at no extra charge at the end of next year.

The expanded memory would be able to make better use of the IBM MVS/ESA operating system in its storage-management

capacity, according to a spokesman for the company.

The new mainframe is slated for availability in February, according to the company.

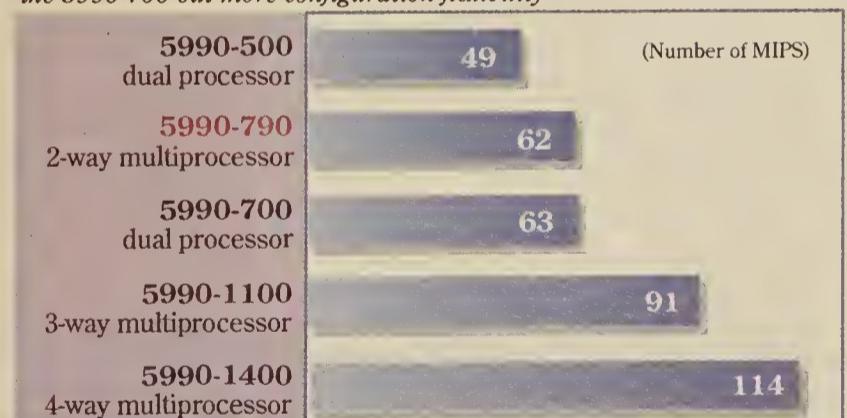
At that time, Amdahl will also provide a 10% performance boost on its 5990-500 dual processor.

The basic configuration of the 5990-790 will feature 128M

bytes of main storage and 64 channels, and with the SRAM addition, its memory capacity could double to 1G byte. Amdahl currently uses SRAM chips, but the new chip board will be four times as dense. The additional memory will be offered at the same incremental cost as current memory, according to Moore.

Options grow

Amdahl's new mainframe, the 5990-790, offers performance similar to the 5990-700 but more configuration flexibility



SOURCE: AMDAHL CORP.

CW CHART: DOREEN DAHLE

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A Comparison Chart of the Major Cooperative Processing Software Products:

Functions:

	SUPER-LINK® Family	Easel™	Mozart™	Arbiter®	IBM's HLLAPI or APPC™ or CPI-C™
Processing Topologies Supported					
SAA CUA Interface for existing 3270 applications:					
Under PC/DOS	Yes	No	No	No	No
Under OS/2	Yes	Yes	Yes	No	No
Transition from PC/DOS to OS/2	Yes	No	?	No	No
3270 Communications	Yes	Yes	Yes	No	Yes
Peer-to-Peer Communications:					
for extending existing 3270 applications	Yes	No	No	No	No
for new applications	Yes	No	No	Yes	No
Maintenance of PC applications & data from a central library	Yes	No	No	No	No
Background file transfer in PC/DOS	Yes	No	No	No	No
Background peer-to-peer processing in PC/DOS	Yes	No	No	No	No
Object Orientation	Yes	Yes	No	No	No
CASE/Application Generation	Yes	No	No	No	No
SAA CUA Support					
All functions supported on PC/DOS:	Yes	No	No	No	No
Action Bar	Yes	*	Yes	No	No
Pull-down menus	Yes	*	Yes	No	No
Pop-up menus	Yes	*	Yes	No	No
Messages and Prompts	Yes	*	Yes	No	No
Dialog Boxes	Yes	*	Yes	No	No
Forms	Yes	*	Yes	No	No
Direct support for multiple levels of action bars and pull-downs	Yes	*	No	No	No
Action bars and Pull-downs in a form	Yes	*	No	No	No
Single and multiple selection menus	Yes	*	No	No	No
Menus and Lists within a form	Yes	*	No	No	No
CUA defined help	Yes	*	No	No	No
Development System Features: available without programming					
Field-level context-sensitive help	Yes	No	Yes	No	No
Optional learning mode (help always displayed)	Yes	No	No	No	No
Embedded User Assistance (pop-up selection lists)	Yes	No	No	No	No
Dictionary for storage and re-use of definitions & documentation	Yes	No	No	No	No
Data Editing/Validation:					
Data type/mask checking	Yes	No	Yes	No	No
Range/limit checking	Yes	No	No	No	No
Date formatting/checking	Yes	No	No	No	No
Validation against database files	Yes	No	No	No	No
Required fields	Yes	No	No	No	No
"Must Fill" fields	Yes	No	No	No	No
Zero not valid fields	Yes	No	No	No	No
Multiple validation points during PC processing of transaction form	Yes	No	No	No	No
Complete local application testing, database maintenance, interface testing, and mainframe communications simulation	Yes	No	No	No	No
Language Objects Available Without Low Level Programming					
Display and selection from:					
In-memory lists	Yes	Yes	Yes	No	No
File lists	Yes	No	Yes	No	No
Database lists	Yes	No	Yes	No	No
Menu display and selection	Yes	No	Yes	No	No
Help at all levels: (Panel, Action bar, Menu, Form, & Field)	Yes	No	Yes	No	No
Error Processing	Yes	No	Yes	No	No
Add/update/delete/locate on:					
Sequential files	Yes	Yes	Yes	No	No
Database files	Yes	No	Yes	No	No
Host logon sequence	Yes	No	No	No	No
Determining 3270 screen identification	Yes	No	Yes	No	No
Read/Write all fields on 3270 screen with a single command	Yes	No	No	No	No
Determine dynamic 3270 field attribute changes	Yes	No	No	No	No
Dynamic modification of field attributes based on form entries					
Initial values displayed	Yes	No	No	No	No
Protected/unprotected fields	Yes	No	No	No	No
Development Environment Comparison					
Object Orientation	Yes	Yes	No	No	No
Dictionary and documentation	Yes	No	No	No	No
Panel/Form painter for Creation/Maintenance	Yes	Yes	Yes	No	No
3270 screen capture: Picture and attributes	Yes	No	No	No	No
Application Generation (CASE)	Yes	No	No	No	No
Intelligent editor (language sensitive)	Yes	No	No	No	No
System/user defined templates	Yes	No	No	No	No
Integrated compile/test/debug	Yes	No	No	No	No
Keyboard re-mapping	Yes	Yes	Yes	No	No
Compiled environment	Yes	Yes	Yes	No	No
Execution-time source debugging	Yes	Some	No	No	No
Host Environments Supported for Peer to Peer					
MVS - CICS	Yes	No	No	Yes	No
MVS - IDMS/DC	Yes	No	No	No	No
MVS / TSO	Yes	No	No	No	No
DOS / VSE-CICS	Yes	No	No	Yes	No
VM / CMS	Yes	No	No	Yes	No
DEC VAX / VMS	Yes	No	No	No	No
Minimum PC Hardware Requirements: IBM XT / Clone, 640k	Yes	Yes	Yes	Yes	Yes

*Easel does not support the SAA CUA style interface under PC/DOS only under OS/2.

Every effort to present an accurate chart has been made, however no guarantee can be made (8/7/89). Super-Link® is a registered trademark of Multi Soft, Inc., Lawrenceville, NJ. Mozart™ is a trademark of Aspen Research. Easel™ is a trademark of Interactive Images, Inc. Arbiter® is a registered trademark of Tangram Systems.

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INFRONT/RT™ (Run-time) is the run-time software that allows the developer to deliver the PC portion of the peer-to-peer or 3270 data stream applications developed using INFRONT/DS.

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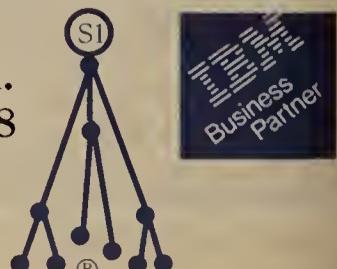
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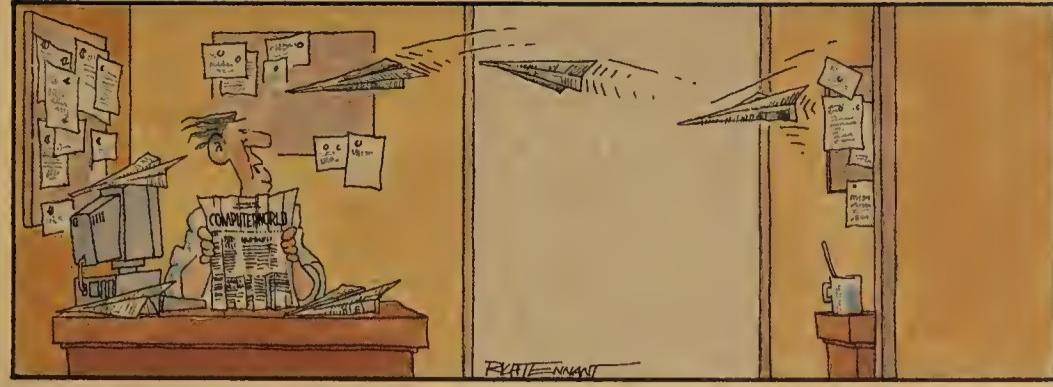
INFRONT/BCF™ (Background Communications Facility) allows PC programs to communicate to an IBM host on a file-by-file or record-by-record basis in either foreground or background modes. When running in background mode, any non-communicating PC program can be running in the foreground.

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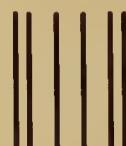
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Database sector slated for growth

BY MARYFRAN JOHNSON
CW STAFF

NEWTON, Mass. — The concept of distributed database — moving data out from the mainframe and closer to the information systems group's clients — may not be a reality yet, but it could fuel a major computer industry segment's growth by 1993, a recent study said.

After surveying 100 IS departments in the banking, finance and insurance industries, market research firm Business Research Group concluded that revenue from distributed database software will grow from \$150 million in 1988 to more than \$1.2 billion by 1993.

The main beneficiaries of this growth will be those software companies with products geared to distributed environments and hardware companies selling platforms that support multiuser dis-

tributed architectures, said Kevin O'Neill, vice-president of research at BRG.

"The whole trend, which will be prominent in the 1990s, is for information technology to be used as a competitive weapon rather than a back-room number-cruncher," O'Neill said.

Databases will move "a lot closer to where business is being conducted," he added. That will allow companies to generate new sources of revenues and increase market share by offering faster turnaround, new services and broader options.

Citicorp, for example, recently implemented Global Trader, a 24-hour, on-line information service that allows its securities traders and users to link up with a real-time distributed database network. "This could only be accomplished by the use of distributed relational databases," O'Neill noted.

HP, IBM on speaking terms with new systems release

BY J. A. SAVAGE
CW STAFF

It appears that relief may be on the way for a handful of Hewlett-Packard Co. customers who have both HP 3000 minicomputers and IBM midrange computers or mainframes.

HP last week planned to ship an operating system fix that would eliminate the need of having to use an old HP computer as a front end to let the two computers communicate.

That problem will be fixed, according to HP, with its next MPE/XL operating system Release 2.0, scheduled for the end of this month.

"[Using the older machines] costs extra, not a lot, but some," said Marsh Brough, manager of distributed technical services for 3M in St. Paul, Minn. Brough has been using mainly older HP 3000 Model 70s for communications. While HP has loaned some of those machines, Marsh said, "I don't want to do it forever."

When the first MPE/XL processors were released in 1987, the operating system could handle neither SNA nor bisynchronous communications, said Jay Kidd, marketing manager for HP's Business Network Division. The company felt that SNA should be addressed first and did so last year.

Although the study addressed both client/server databases and "true" distributed databases, O'Neill said truly distributed databases are still more fantasy than reality. Of the estimated 630,000 database systems now in use in banks, finance and insurance companies, the BRG study found that 8,350 can be considered client/server systems while only 25 are "true" distributed systems.

Yet, by 1993, client/server databases in these industries are expected to grow to 63,000 and true distributed database systems to 1,600. "The wave of products enabling the creation of

these databases is just becoming available," O'Neill said.

Some of the missing links, however, are a common data dictionary across multivendor platforms and the inability of these systems to change or update the

database in a distributed fashion.

The lack of appropriate standards for communications and protocols of distributed databases also poses a hurdle for heterogeneous distributed databases, the researcher said.

Bank on it

The financial, banking and insurance industries will be moving more of their database systems down to PCs and servers

Number of installed systems	1988	1993
All database systems, excluding PCs	60,000	40,000
All database systems, including PCs*	630,000	2,300,000
Client/server systems	8,450	63,000
True distributed database systems	25	1,600

* Includes client/server systems

SOURCE: BUSINESS RESEARCH GROUP

CW CHART: FRANK C. O'CONNELL

Chicago firm makes CASE for IBM system

BY ROBERT MORAN
CW STAFF

CHICAGO — Systems Software Associates, Inc. recently announced a computer-aided software engineering (CASE) tool specifically designed for the IBM's Application System/400.

According to the Chicago-based firm, the software, called AS/SET, generates structured, modifiable RPG/400 code for batch and on-line programs and generates applications compliant with IBM's System Application Architecture and SAA's Common User Access.

"With AS/SET, if you want to do something that is not SAA standard, you have to tell it to do that," said Roger Covey, president of the company.

Covey said that the software's data modeling techniques permit developers to extract relationships from existing AS/400 applications and relational databases. In addition, he said the company has reduced the high-level complexity of action dia-

grams — with which users interact when building applications with CASE tools — to an intermediate level that enables the software to be more useful in the AS/400 environment.

Beta-test user Tom Knapp, manager of information technology consulting at Touche Ross & Co., is using AS/SET to convert a system from the IBM 370 architecture onto the AS/400. According to Knapp, AS/SET permits the organization to control data in an efficient, structured way for applications development.

Standards gains

In addition to productivity gains, Knapp said that the software will implement standards.

"The structure of the system requires an adherence to standards in the way we treat data, create documentation and move through the development process," he said.

After the initial learning curve of three to six weeks, users will be able to put screens to-

gether and develop menus and processes, Knapp said.

Despite productivity gains, AS/SET is not as well developed as the Synon CASE tool from Synon, Inc. in Larkspur, Calif., Knapp said. Nevertheless, he said that AS/SET has been good for the conversion application. He further praised AS/SET's ability to permit developers to interact with users and quickly build prototypes of applications.

Michael Sicilian, director of systems at Marsh and McLennan Group Associates, New York, a large AS/400 user, said CASE will be important for the AS/400 because of the increased productivity and better quality control it brings to software development. Nevertheless, Sicilian is waiting to see a trend toward one methodology before he installs a tool within the six shops for which he has responsibility.

AS/SET will be available at the end of January and will cost between \$20,000 and \$70,000, depending on the size of the AS/400 and the number of users.

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M&D tests inventory control module

BY ROBERT MORAN
CW STAFF

NATICK, Mass. — McCormack & Dodge Corp. recently announced that it will integrate an inventory control module into an application for the banking, health care and insurance industries.

The module, called IC:Millenium, will enable organizations to track in real time which supplies to order, when and in what quantities, and it will yield sufficient savings to pay back the investment within a year, the company said.

Beta-test user Stephen Wallis, manag-

er of purchasing services at Lee Memorial Hospital in Fort Meyers, Fla., said the IC:M system will pay for itself in a few years by giving the hospital better control of the \$2.75 million worth of annual inventory it maintains to meet the immediate needs of physicians. Wallis said the inventory is a critical and difficult-to-maintain part of its \$25 million annual inventory budget.

With the software package, organizations can create account specifications before transaction time, and the system will search through the specifications to debit or credit the appropriate accounts. A fea-

ture called autoreplenishment automatically searches for requested items at each warehouse and activates the transfer of goods between locations. Another feature, called summarized pick lists, consolidates requests for materials to reduce the manual search for stock.

IC:M is also integrated with M&D's materials management software, which includes general ledger, purchase order and accounts payable modules.

When integrated with the materials management software, the company said that IC:M's autoreplenishment feature, for example, will be extended.

With the integrated software, if a requested stock item is not available, the system will automatically generate a purchase order. Once the item is received and the invoice matched, the accounts payable module generates payment to the supplier, the company said.

Wallis said the hospital purchased a complete materials management system, in part, because it was customizable.

The hospital has been running an online, real-time system for about five years from another vendor that Wallis declined to identify, but it was looking for a system that it could grow with.

"We were looking for a system that would give us access to programming modules," he said. "We couldn't customize the former package to our needs."

Although the other vendor offered to make the changes, Wallis said he did not want to have to communicate those changes back and forth with the vendor.

The hospital will bring the system online in March and is in the midst of writing its applications. "We will start with the system as it is now and modify it as we go along," he said.

IC:M, which will be available in March, costs \$125,000 and requires M&D's Purchase Order:Millenium, which costs \$105,000.

HARD BITS

Matsushita cites advance

Matsushita Electric Industrial Co. Ltd. in Osaka, Japan, said recently that it has produced a Josephson Junction that will enable high-speed switching for next-generation computers. The company presented a paper on the device at the International Superconducting Materials Symposium held late last month in Tsukuba, north of Tokyo.

IBM pioneered Josephson Junction technology in the late 1970s and early 1980s, but in more recent years it has eased off its development efforts because results appeared elusive.

Josephson Junctions create a current between two superconductors in close proximity. Kentaro Setsune, head of Matsushita's research team, said in Japanese press reports that his lab had confirmed the presence of the current across a non-conducting material sandwiched between two superconductors made of bismuth, strontium, calcium, copper and oxide. He added that bismuth-based superconductors are more stable than the more common yttrium thin films used to produce the Josephson Junction current transmission effect.

Thomson SA of Paris recently announced that **IBM France** acquired a 49% interest in its Thomson Digital Image (TDI) subsidiary. TDI makes software for three-dimensional design and animation.

Data General Corp. said Lynx Real-Time Systems has agreed to develop a version of its LynxOS real-time operating system for the DG Avion line of workstations. The operating system has been targeted at factory automation, high-speed simulation and signal processing applications.

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Kodak workstation ships microfilm images

BY ELLIS BOOKER
CW STAFF

ROCHESTER, N.Y. — Eastman Kodak Co. late last month announced a digital workstation for transmitting microfilm images.

In June, the company had announced the first of its Imagelink products, which it offers to integrate micrographic and digital imaging systems.

Although Kodak is not the first company to offer such a workstation, its move is noteworthy because the company has a large installed micrographic base and is in the forefront of linking microfilm and electronic systems, industry analysts said.

Kodak's Imagelink workstation scans and digitizes a microfilm image for transmission over computer networks or phone lines. Output can be made to a laser printer, facsimile machine or optical disc. Additional features include the ability to scale, correct or merge the digitized image with ASCII text files.

Kodak said the workstation

will be available in January at prices ranging from \$25,000 to \$40,000 and will initially support image transmission to local printers or faxes. Connections between workstations over Token-Ring and Ethernet networks are planned in 1990.

Despite inroads by fully digital storage systems, microfilm continues to be a popular medium and is growing in the U.S. by around 9% annually, according to the Association for Information and Image Management (AIIM) in Silver Springs, Md.

AIIM represents hardware and software vendors involved in image technologies such as microfilm and optical storage. The trade group said it believes that electronic imaging products, which represented only 24% of the computer market last year, will far outpace micrographic systems, growing at a compound annual rate of 54% to reach \$6.8 billion by 1993. AIIM predicted that electronic storage will represent more than half of the \$12.7 billion U.S. imaging market by 1993.

SOFT NOTES

Federal users get guarantee

On-Line Software International, Inc. recently launched a Lifetime Software Trade-in Guarantee for its customers in the government. The guarantee allows government users to return any On-Line software product purchased after Oct. 1, 1989 under the company's maintenance program for full credit toward the acquisition of another On-Line product.

Sybase, Inc. and **Smartstar Corp.** recently announced a joint marketing and technology agreement as part of the Sybase Synergy Program. Under terms of the agreement, Smartstar said that it will develop an interface to the Sybase SQL server from its fourth-generation language development environment for Digital Equipment Corp. VAXs. Sybase said the Smartstar:Sybase Connection is scheduled to be available in the second half of 1990.

DEC recently announced several new cooperative marketing agreements. The Maynard, Mass.-based firm has teamed up with **Disc, Inc.**, a Nynex compa-

ny headquartered in Baltimore, to sell its Access banking software. DEC also arranged for **Metier Management Systems, Inc.** in Houston, Texas, to market its Artemis project management family of software for VAX computers.

San Jose, Calif.-based Arix Corp. has contracted with **Mindcraft, Inc.** in Palo Alto, Calif., to test and verify conformance of its Arix System 90 multiprocessor Unix systems to the federal government's Posix standard, required for government bids.

Natural Language, Inc. (NLI) and **Intergraph Corp.** have signed an OEM and joint marketing agreement under which NLI will port its Natural Language and NLI Connector database access products to Intergraph's Unix-based Clipper workstations. The products are slated for availability by the end of 1989.

Meta Software Corp. in Cambridge, Mass., announced that it has selected distributor Micro-

match, based in England, to exclusively market its computer-aided software modeling tools in England and Ireland.

Neuron Data, the maker of the Nexpert Object expert system shell, is the latest firm to join the **Object Management Group**. The OMG was founded last spring to promote standards for an object-oriented application environment.

The **Open Software Foundation** recently identified the candidates for two published requests for technology (RFT). Seventeen organizations, including Hewlett-Packard and Software Engineering Associates, qualified for the architecture-neutral distribution format RFT, which is intended to allow software applications to run on any computer architecture.

An RFT for distributed computing technology drew 28 qualifying computer and software vendors, including DEC, Microsoft Corp., HP and Sun Microsystems, Inc. Decisions on the proposals are expected to be made next year.

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5. Are you feeling insecure about your PC LAN security?
6. Is the performance of your network going down as the number of users goes up?
7. Do your computing vendors spend more time pointing fingers at each other than pinpointing problems?
8. Is it impossible to expand your computer system the same way you add users. . .incrementally?
9. Is Engineering having trouble communicating with Marketing? Is Building 2 difficult to reach from Building 6? Is the second floor not talking to the seventh?
10. Are your users wasting time trying to communicate with uncommunicative hosts?
11. Is your computing system unable to run both DOS and OS/2 programs?
How about the new SQL database applications?

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Visa

CONTINUED FROM PAGE 23

hardly disturbed operations here, said Janice Vandenbrink, who oversees Visanet installations. "All our CPUs are on rubber pads," Vandenbrink said. "They do better if they're allowed to move around during an earthquake."

The data center is housed in a \$10 million "earthquake-proof" building, designed to withstand a magnitude 8.1 earthquake — equivalent to the April 1906 earthquake that nearly destroyed San Francisco.

San Mateo's primary CPUs include an Amdahl Corp. 5990, an IBM 3090 and an IBM 4381 and are duplicated by comparable systems at the McLean, Va., center. They are also protected from power failure by several backup systems. "Each device is connected to two power units, so if one fails, there's always another to take it on," Vandenbrink explained. A roomful of chemical batteries carries the systems through the switchover to a diesel generator if necessary.

At the network's 350 end points — most of them at data centers in large banks — pairs of IBM Series/1s are used to transmit credit authorization requests to Visa's host systems. The pair of Series/1 machines ensures uptime in case one fails, and each device can transmit to San Mateo or McLean using a two-way "soft-switch" programmed in 1983 by Visa developers.

Recently, some large Visanet sites have installed IBM System/88 fault-tolerant computers, built by Stratus Computer, Inc. "The System/88 offers more capacity at the high end, so it gives us growth for the very largest end points in our network," Fisher said. The System/88s offer something else — the chance to place one system at a bank site instead of two without sacrificing uptime.

Visa's San Mateo center has four System/88s installed alongside the center's mainframes. So far, six more System/88s have been deployed in Canada, and several more have been installed at member banks. Even more are on the drawing boards, Fisher said.

For cost reasons, many of the aging Series/1s — first installed in the late 1970s — are being replaced with IBM Personal System/2 Model 80s. The total

cost is lower, since two PS/2s average \$20,000, while each Series/1 costs \$30,000 to \$40,000, Fisher said. "For the small Visa member banks, that pair of PS/2s means that if something fails, they won't be dead in the water," Fisher said. "They've still got a box." That is especially important in Latin America, the Middle East and Africa, where service calls are more difficult to manage.

Significantly, the PS/2s run Unix, so they can handle multiple applications simultaneously. Visa began writing Unix applications in the mid-1980s as a multi-tasking alternative to PC-DOS. "There are periods of time at night when these machines run our clearing and settlement applications, even as new transactions are being dialed into our host systems for credit authorization," Fisher said.

Visa's PC applications, written in C, are now being run on the System/88s

THE DATA CENTER is housed in a \$10 million "earthquake-proof" building.

with little change, Fisher noted. "That proves that C code is reasonably portable," she said. "It wasn't like you could run the PC code without change, but it was close enough so that you could make changes to about 20% of the code as you ported it over."

Looking ahead to the 1990s, Fisher thinks Visa will retain its central-site computing centers but adds that there will be more of them. The overall design, she said, will continue to look like a series of concentric rings with the hosts at central sites, an expanding pool of network nodes or end points, and a growing population of automatic dial-up terminals, beyond the one million already at retail stores worldwide.

"This architecture has a ring around the host systems that allows us to make changes to our central systems and still not affect our member banks' processing centers," Fisher said. "That gives us the freedom to move about inside the ring and gives our members the freedom to move to new systems, as long as they maintain our standards for interfacing to Visanet."

Within the comfort zone

When Visa USA was set up as an industry clearinghouse for credit card regulation in the early 1970s, the new organization was largely in place to promote the card, to set up the rules and to develop new products and services, recalls Visa spokesman Dan Brigham.

In the 1970s, Visa was using Digital Equipment Corp. PDP-11s to process transactions, and just 13% of all those clearing and settlement transactions were handled electronically. The rest were processed manually, requiring store clerks to check a Visa publication that listed "bad" credit cards. Today, nearly 80% of the 3.2 billion transactions processed by Visa annually are handled by computer. Visa now spends roughly half its operating budget — estimated at more than \$100 million — on IS operations.

At peak holiday buying periods, Visa exceeds 1,500 transactions per second, which is nearly top speed for the IBM TPF transaction-processing system running under IBM MVS on mainframes in Visa's San Mateo, Calif., and McLean, Va., data centers. To minimize system downtime, Visa "freezes" system changes such as system upgrades and the addition of connections from November through January [CW, Jan. 30]. But most times, Visa is well within the comfort zone in terms of transaction volume, says Visa's Rosalind Fisher, while not ruling out IBM system upgrades.

JEAN S. BOZMAN

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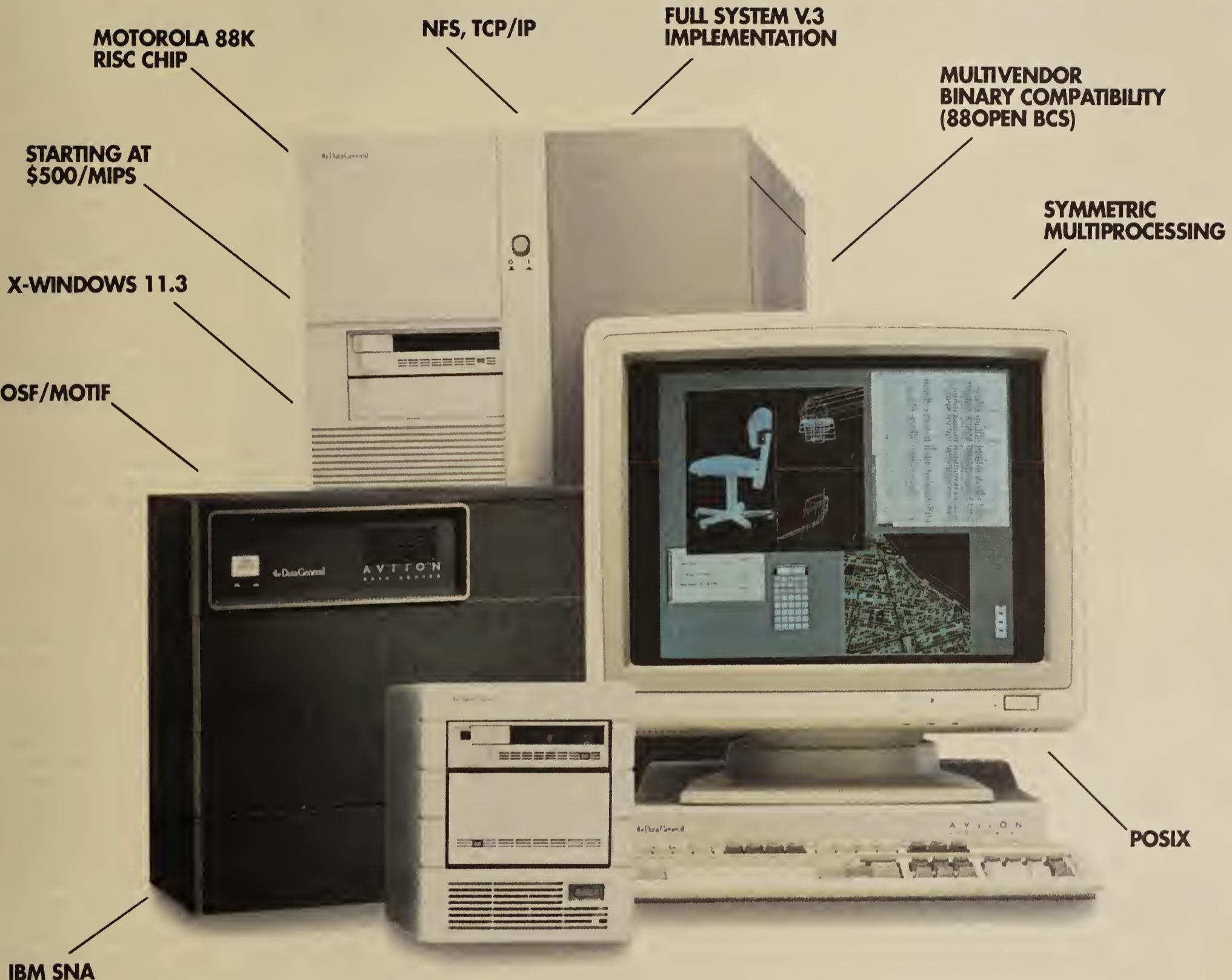
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Cortese

FROM PAGE 23

cussions are unprecedented, and they underscore the changing environment in which computer companies operate.

Using the "Cola wars" analogy, it's like inviting Sprite, Fanta and Seven-up, along with Pepsi, to run Coca-Cola.

But what is the likelihood that these negotiations will come to fruition? And is a jointly owned, bipartisan Unix Software Operation necessarily what the industry needs?

Opening up the Unix Software Operation to outside ownership is a complex proposition raising many issues that are likely to drag negotiations on for several months. First on many

potential investors' list of concerns is setting a fair value for AT&T's Unix business. That is no easy chore. Financially, it has not been profitable. But based upon one's assumptions, its attractiveness varies widely.

If one believes that AT&T's Unix is the only game in town, as some do since the heralded arrival of Unix System V, Release 4, then that value is potentially

much higher. If, on the other hand, one is optimistic that the Open Software Foundation will successfully introduce its own competitive Unix implementation, then that value may be lower.

As one vendor involved in the negotiations said, "Almost always when you have a seller and a potential buyer, they have different views." After all, an-

other said, this is first and foremost a business deal.

Another negotiating obstacle is how such a deal would be structured. There's no telling how many potential investors may show up at AT&T's door. But while AT&T has said it would like to keep ownership limited to those with a stake in open systems, there are questions as to whether it can legally deny an interested investor.

Legal issues aside — even if investors could be limited to the major players currently embroiled in the Unix crusades — there is significant potential for problems. Those companies most interested would essentially be the same firms that are on the board of X/Open.

Are we talking about X/Open II?

Fast on its feet X/Open is not. Decisions seem to drag on interminably as board members toe the party line (in this case, the parties being OSF and UI) on issues ranging from a graphical user interface (GUI) to the Portability Guide. For some reason, the group's latest Portability Guide, a published set of specifications, was released several months later than promised.

And the GUI issue has been mired in politics from the start, with still no decision nearly a year after the group announced it would specify a GUI standard. Yes, there are technical factors to be resolved, but the handling of the GUI specification had all the elements of a dirty political campaign.

And these are the shareholders who would presumably elect a board of directors?

These are only a few of the issues that will have to be hammered out. And there are still the all-important decisions to be made about logos and public relations announcements — decisions that somehow consume an amazing amount of time and energy. All of which leads me to the conclusion that perhaps the time and energy is best put to more productive use.

Collaboration is needed, but it may not require merging the two groups (OSF and UI/USO) or spreading around ownership of USO. As long as OSF and UI/USO agree to follow common standards, such as those specified by X/Open, a high degree of compatibility can be ensured. After all, end users (who stand to benefit by all this) have said that they welcome the competition. Competition accelerates the pace of development and gives users a choice. A Unix collective may just serve to slow down progress.

Besides, as DEC's Ken Olsen reminds us, if there was no conflict, what would we journalists write about?

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Cortese is *Computerworld's* Mid-Atlantic correspondent.

NEW PRODUCTS — SOFTWARE

Training

Computer Associates International, Inc. has announced Release 2.0 of CA-Uniservice II, the company's extended service support and education system for IBM MVS, VSE and VM operating systems.

The latest release includes an IBM Personal Computer hardware configuration upgrade and extended accessibility to the CA-Uniservice II PC from IBM 3270 terminals.

The user can also install software through the mainframe link, the company said.

CA-Uniservice II Release 2.0 costs \$20,000.

CA
711 Stewart Ave.
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Applications packages

Information Dimensions, Inc. has revised its text information management system.

Basisplus is an integrated electronic repository that provides retrieval, storage and other large document management functions. The software reportedly offers an enhanced user interface. It also is said to support compound document architecture, including full-text, structured data, graphics and photographs.

A first-copy license is priced from \$5,000 to \$179,000, depending on CPU size and number of users.

Information Dimensions
655 Metro Place S.
Dublin, Ohio 43017
800-328-2648

Michael-Delia, Inc. has announced the release of a multiuser software program that incorporates a task database designed for targeting employee performance areas that merit more attention.

Called Performa, the program runs in a mainframe environment to track individual and work-group activities by defined work tasks. According to the company, the software can assist in budget and schedule planning and time-efficiency training of end users. It is leased with one- or two-year licensing agreements.

Based on the number of users, annual license fees are priced from less than \$25,000 per year.

Michael-Delia
12526 High Bluff Drive
Del Mar, Calif. 92130
619-792-3524

A software package designed to monitor accounts payable functions in an IBM mainframe environment has been announced by

The Financial Information Systems Corp.

Called The Tax Manager, the system controls and contains sales and use taxes and complies with individual state jurisdictional requirements, the firm said. It monitors accounts payable payments without modification to

the actual system to determine whether sales and use taxes are applicable or not.

The Tax Manager runs under DOS, VM and MVS and is priced at \$50,000.

Financial Information Systems
Suite 150
341-1 E. Center St.
Manchester, Conn. 06040
203-646-9548

A manufacturing software package for the IBM Application System/400, Models B20 through B70, is now available from J. D. Edwards & Co.

Called MRPX, the system includes a Product Data Management module for bills of material, routing and product costing functions, as well as modules for shop floor control, master production scheduling and material

requirements planning. A capacity requirements planning module has been scheduled for delivery in the second quarter of 1990.

MRPX costs from \$100,000 to \$650,000, depending on hardware configuration.

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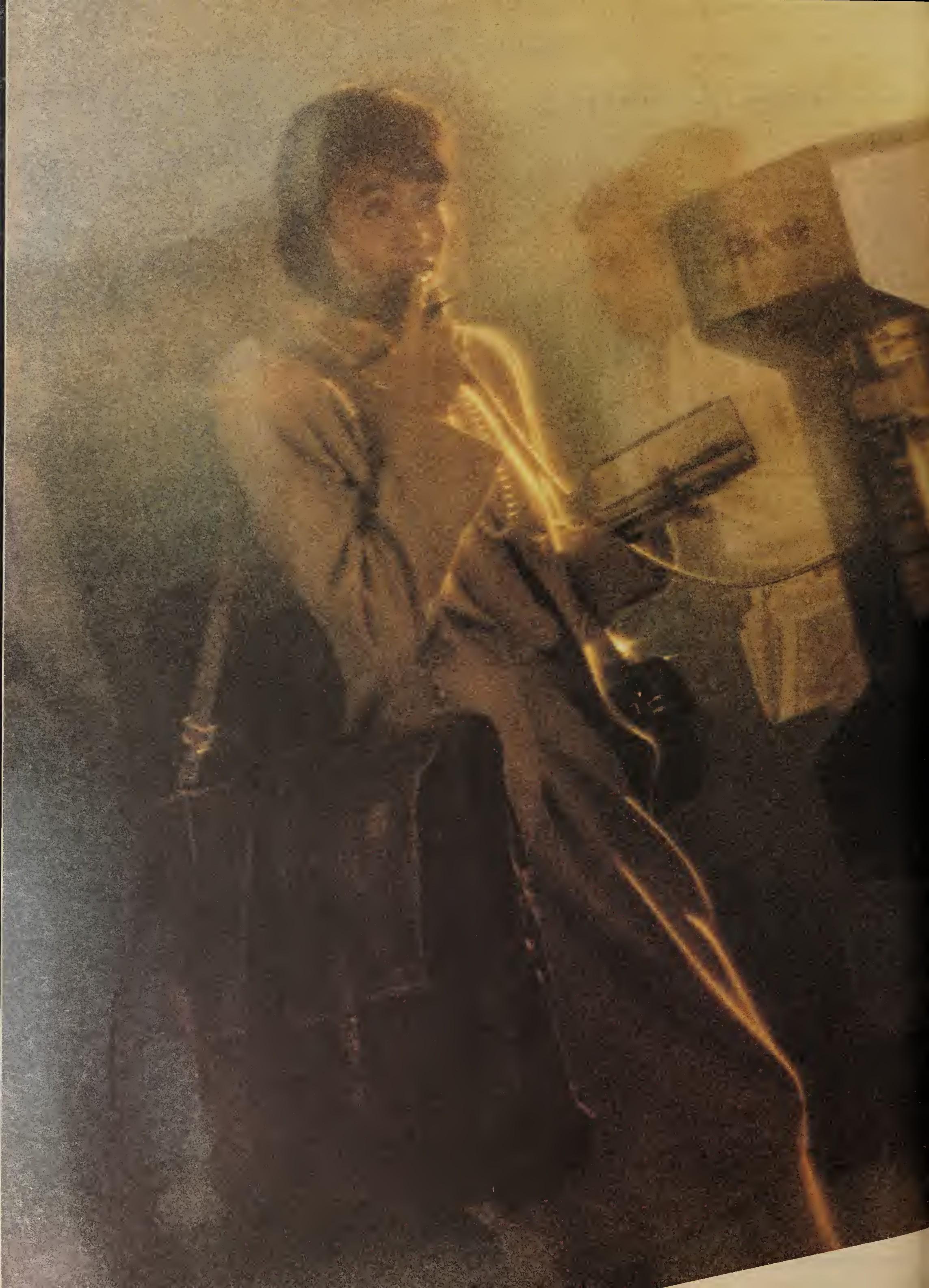
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NEW PRODUCTS — SYSTEMS

Data storage

American Digital Systems, Inc. has announced a rewritable optical disc storage system for Digital Equipment Corp. Q-bus, Unibus, 3100 family and Unibus-adapted BI Bus systems.

According to the company, Master Disk Optical can store up to 594M bytes of formatted data on one double-sided 5½-in. disc.

The Master Disk system has a reported average seek time of 95 msec and a sustained data transfer rate of 925K bytes/sec.

Prices for the Master Disk Optical storage system begin at \$5,795 for a 3100 family system drive and disc.

Additional preformatted discs are available for \$295 each.

American Digital Systems
490 Boston Post Road
Sudbury, Mass. 01776
508-443-7711

Advanced Graphic Applications, Inc. has announced the Discus for Xenix Rewritable Optical Disk Subsystem for multiuser, multitasking environments.

The product offers plug-and-play installation and a device driver that allows Xenix users to interchange data between optical and magnetic media in the same manner in which files are copied from one disc to another, the company said. It is especially suited for computer-aided design, computer-aided engineering and computer-aided manufacturing applications.

The subsystem can also be connected to a stand-alone workstation and a network file server.

An external unit, which includes a proprietary small computer system interface host adapter, device driver software and a 650M-byte erasable optical disc, is priced at \$6,495.

AGA
90 Fifth Ave.
New York, N.Y. 10011
212-337-4200

Locom Corp. has announced memory upgrade boards for the IBM Application System/400 B10 and B20 processors.

Locom memory cards plug into the same slots as the IBM storage cards and are recognized by the system's autoconfiguration sequence. Also available are 4M-byte and 12M-byte versions.

The 4M-byte and 12M-byte cards are available for \$4,000 and \$10,500, respectively.

Locom
2350 Bering Drive
San Jose, Calif. 95131
408-435-1414

Mountain Computer, Inc. has announced an 8mm tape system designed for Digital Equipment Corp. workstations and servers.

systems interface (SCSI).

The complete Filesafe 2100 D kit includes an auto-sensing power supply, one 2.2G-byte tape cassette, an SCSI interconnect cable, a power cord, an SCSI terminator and a cleaning kit. The kit costs \$6,795.

Mountain Computer
240 Hacienda
Campbell, Calif. 95008
408-379-4300

Distributed Logic Corp. (Dilog) has announced an erasable optical disc storage device available for Digital Equipment Corp. Q-Bus and Unibus users.

The Dilog optical disc subsystem is available in single- and dual-drive tabletop or rack-mount configurations.

It utilizes a small computer systems interface and is capable of storing up to 594M bytes of

formatted data per 5-in. disc cartridge.

Pricing for the subsystem begins at \$7,470 for a single-drive tabletop model.

In addition, a dual-drive tabletop model is available for \$13,535.

Dilog
1555 S. Sinclair St.
Anaheim, Calif. 92806
714-937-5700



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Placing NetWare SQL at the server strengthens the integrity of your database. It provides fault tolerance through NetWare's highly acclaimed Transaction Tracking System. NetWare SQL even gives you con-

I/O devices

Iris Graphics, Inc. has unveiled the second product in its line of continuous-flow color ink-jet printers.

According to the company, the Iris 3047 applies variable-dot-size color printing technology to a variety of functions, including graphic arts, printing,

publishing, computer-aided design and manufacturing, industrial design, and seismic and aerial mapping. The large-format printer can produce photo-realistic, full-color images in any format up to 43 by 47 in. It is priced from \$120,000.

Iris Graphics
6 Crosby Drive
Bedford, Mass. 01730
617-275-8777

A family of midrange display stations aimed at IBM Application System/400 and System/34, 36 and 38 users has been introduced by I-O Corp.

The Series 2000 consists of five twin-axial terminals: the seven-color four-session 2477C; the monochrome 2477DF, with the same features in amber, green or white; the 2476C, with a three-session seven-color dis-

play and its monochrome 2476D version; and an entry-level 2196 single-session display model. Pricing is from \$795 to \$1,595, the company said. The products are reportedly compatible with IBM 5294/5394 remote control units.

I-O
2256 S. 3600 W.
Salt Lake City, Utah 84119
801-973-6767

A multiresolution 32-bit VME-based graphics display controller has been introduced by Metheus Corp.

Christened the Omega 4700MR, the unit reportedly operates with 60 Hz or higher non-interlaced red-green-blue color monitors and provides viewable resolutions from 1,280 by 1,024 dot/in. up to 2,048 by 2,048 dot/in.

The product is targeted toward OEMs and systems integrators whose applications require high-resolution and up to 24-bit planes of image memory. It is available to developers and will be shipped in February.

The unit is available in two versions: the 8-bit Omega 4700MR, which sells for \$29,950; and the Omega 4720MR, which incorporates a graphics processor and lists for \$40,950.

Metheus
OGC Office Park
1600 N.W. Compton Drive
Beaverton, Ore. 97006
503-690-1550

A 940 line/min. shuttle matrix line printer has been introduced by C. Itoh Electronics, Inc.

Targeted for high-volume multitasking printing applications, the CI-1000 prints at 940 line/min. in high-speed draft mode, 700 line/min. in data processing mode and 200 line/min. in letter-quality mode, the vendor said.

The 16-in. carriage permits the user to output as many as 233 columns for wide data processing reports, spreadsheets and large graphics. The product will print an original plus five copies and costs \$9,995.

C. Itoh
2505 McCabe Way
Irvine, Calif. 92714
800-347-2484

Univision Technologies, Inc. has introduced a VME-based display controller family designed to support multiple resolutions.

According to the company, the UDC-5000 series of graphics controllers can display resolutions from 640 to 480 dot/in. and 1,280 to 1,024 dot/in., depending on memory configuration. Frame buffer memory can reportedly be set at 2,048 by 1,024 to allow large images to be panned, zoomed and scrolled at display resolutions.

The firm has also introduced a software development support library for the series, which includes a C language interface that allows graphics and image processing applications to be ported quickly to the board by users.

The controllers are priced at \$7,850 in single-unit quantities, depending on memory configuration.

Univision
12 Cambridge St.
Burlington, Mass. 01803
617-273-5388



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(A) WY-3225, 25 MHz 386 as multi-user platform driving (B) WY-60 terminal, (C) WY-150 terminal and (D) WY-370 color terminal. (E) WY-3225 as LAN fileserver with (F) WY-2116 16 MHz 286 with WY-650 VGA color monitor, (G) WY-2112 12.5 MHz 286 with WY-700 hi-res monitor, (H) the Wyse Networker and (I) WY-3216 16 MHz 386 with (J) WY-7190 hi-res 19" monitor.

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PCs & WORKSTATIONS

MICRO
BITS

Patricia Keefe

Stalking the wild Lotus



Lotus Development has been a real tiger in recent weeks, and its choice of where to sharpen its claws hasn't always been for the best.

For example, why does Lotus expend so much energy needling Microsoft Chairman Bill Gates?

It's certainly funny at times, given the sharpness of Lotus CEO Jim Manzi's acerbic wit, but at some point it has to turn counterproductive — like maybe when Lotus chimes in on the SQL Server project, now that it owns a chunk of Sybase and has pledged to support its database. Who do they suppose is going to be sitting across the table from them?

Cute quips rarely fail to get a rise out of Microsoft — which ought to lighten up a little, inci-

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Inside

- Issue of OS/2 on a 286 still a ball of confusion. Page 41.
- Medical research group achieves elegant service with basic technology. Page 41.
- Hell Graphics stamps out stripping. Page 48.

ANALYSIS

BY PATRICIA KEEFE
CW STAFF

IBM dropped a potential bombshell at Comdex/Fall '89, but it is hard to predict the extent of any fallout since the firm provided little in the way of details.

IBM derailed its move toward a proprietary desktop by announcing plans to unbundle the three components that make up

its OS/2 Extended Edition — LAN Requestor, Database Manager and Communications Manager — to make those pieces available somehow at some point to any OS/2 user who wants them.

"It is seen as a significant sign that they are moving away from a proprietary operating system strategy. Using system software as a competitive tool was causing more problems than it was solving," claimed J. Paul Grayson,

chairman and chief executive officer of Micrografx, Inc., developers of graphical software.

"Unbundling is always good for the customer — period," said Robert Berger, vice-president of administration at Home Express, Inc., retailers of accessories and wares for the home in Hayward, Calif.

Given that many analysts view IBM's Micro Channel Architecture and the bundled Extended Edition as a defensive reaction to the beating its desktop market share suffered at the hands of AT clone makers, this backpedaling could be viewed as a major concession to OS/2 development partner Microsoft Corp. It is true that Microsoft

has a competing product, but it got into the database business mainly to provide OEMs with an alternative to a closed IBM offering.

Exactly how the unbundling will be done — the critical question for developers and users — remains unanswered. Will IBM unbundle the proprietary pieces and allow users to buy only what they need, thereby cutting down on system overhead; or is IBM planning to license its proprietary extensions to third parties for resale?

IBM won't say — at least not yet. A spokeswoman said IBM felt compelled at Comdex to say what little it did to show its willingness to accommodate large customers who are trying to plan for the future around a multivendor hardware base.

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Customs' expert system targets laundered cash

ON SITE

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Big cash transactions that look suspiciously like illegal money-laundering activity are being uncovered by an expert system at the U.S. Customs Service.

The Customs Artificial Intelligence System (CAIS) emulates the trained investigator in determining suspicious activity and then produces 'alert' lists of suspicious targets for in-depth field investigation, according to Earl Combs, the system administrator.

The \$1.2 million system runs on five Series 4000 workstations from Apollo Computer, a division of Hewlett-Packard Co. The workstations are connected by

an Apollo local-area network for distributed processing.

The prime contractor, Grumman Data Systems Corp. in Woodbury, N.Y., used a software development tool called the Knowledge Engineering System from Software Architecture and Engineering, Inc. in Arlington, Va.

The Customs intelligence office is being reorganized and will become the core of a new, inter-agency Financial Crimes Enforcement Network. Customs expects to add five more Apollo workstations to the 3-year-old CAIS network.

Combs said that CAIS investigators previously had to sort by hand the thousands of currency transaction reports that banks file under the Bank Secrecy Act.

Agents found that manual process to be very inefficient and

laborious four years ago, when the agency received about 750,000 filings, but it became untenable as the volume of reports rose dramatically. Last year, the volume exceeded six million filings, Combs said.

At the same time, money launderers were becoming experts in evading detection. "The bad guys got the hang of what we were doing and became more sophisticated in obfuscating their work," Combs said. "Therefore, the glaring things that showed up previously were no longer showing up."

For those reasons, Combs said, Customs developed the rules-based expert system to



spot unusual patterns of transactions, multiple transactions to one account, unusual occupational classifications and other clues to suspicious activity. Combs declined to provide

more details, saying the system's profile of what makes a transaction suspicious is secret.

He did say that the field agents, who check out the suspects identified by CAIS, use "feedback forms" to report whether the computer-generated alerts were accurate and useful.

That way, the rules in the expert system can be fine-tuned based on the feedback, he explained.

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TRW has combined its massive homeowner database with direct mail marketing for small businesses. The secret of its success is a 1392 printing system from Kodak.

TRW's Real Estate Market Information group in Colton, California, is offering a new personalized direct mail marketing service for local businesses. Using TRW's powerful new homeowner data and a Kodak Ektaprint 1392 printing system, they're doing things that "just wouldn't have been possible a few years ago," according to marketing services manager Rodger Cosgrove. "We can deliver a product which is professional and cost-effective, yet highly personalized. We can give the local business person more bang for the buck."

TRW combines text and graphics on the system's "WYSIWYG" screen, and prints at up to 92 impressions per minute on the 1392 printer. "It gives blacker text images, better definition and crisper line edges," says Cosgrove, "and in direct mail, that's important." For a complete package of information, call 1 800 255-3434, Ext. 551. In Canada, call 1 800 465-6325.

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**S M A L L
T A L K**
James Daly

Warranting some user respect



Call me stingy, but if I peel off a couple of thousand for a PC setup, I expect a little more than the taillight

guarantee. You remember the taillight guarantee, don't you? It was perfected by used car dealers, who promise that the fastback you just bought is fully warranted until, well, they can no longer see the taillights.

If you think that only happens in the unscrupulous underbelly of the automotive industry, guess again. A quick look around reveals that most computer manufacturers get away with product warranties that seem about as long as the shelf life of cut flowers. Most offerings belie the term "guarantee," but the words "flimsy promise" wouldn't look good on the packaging.

Take the Macintosh, for instance. It's nicely designed, has an advertising budget higher than the gross national product of most Third World nations, and Apple execs do everything but drool on themselves when mentioning it. But if you spend a wad of cash on a system or two (they ain't cheap), what do you leave the store with? A slap on the back and the promise that the thing will perform as promised for no longer than 90 days.

So that's why it was encouraging at Comdex when Apple insider Chris Espinosa said the company was considering increasing its coverage. Nothing was cast in concrete, and Espinosa may have been just throw-

Continued on page 43

Platform boundaries blurred by fog of words

IBM, Microsoft dish some mixed OS/2 advice

BY PATRICIA KEEFE
CW STAFF

Users seem to be on the receiving end of a confusing message from IBM and Microsoft Corp. concerning the appropriate hardware platform on which to launch an entry into OS/2. And most are not buying half of that message.

When IBM introduced the Model 50, an Intel Corp. 80286-based Micro Channel Architecture (MCA)-based machine, it was positioned as the perfect platform for OS/2, according to

analysts. IBM no longer ships a 286-based MCA box.

Yet in the last month, Microsoft and IBM have hammered home a different message. Users moving to Intel Corp. 80386 or 1486 computers should migrate to OS/2, even though the 386 version of OS/2 is not expected until mid- to late 1990. Users with 286 or lower platforms should go with Windows, as in DOS.

Given this new stance, *Computerworld* went back to Microsoft and IBM and asked whether they recommend running OS/2

on a 286. Their answer was yes. However, the bulk of the users surveyed over the last two weeks could not disagree more. "It's not an adequate platform," said Trina Grossman, manager of computer operations at Home Express, Inc. in Hayward, Calif.

Analysts tend to agree. "I think OS/2 was designed with an eye toward the 386," said Mary Modahl, an analyst at Forrester Research, Inc. in Cambridge, Mass.

To run OS/2 on a 286 workstation, users need to pump the box with added memory and disk drives. Given the cost involved, they are generally not willing to do this. "You might as well go up to a 386," Grossman said.

"It's not worth spending the money on existing 286 machines to upgrade to run OS/2," said Chuck Colpitts, a vice-president at Travelers Insurance Co. Tak-

ing a 1M-byte DOS machine with a 30M-byte hard disk, he said users typically would have to add 8M bytes and at least another 30M-byte hard drive. "If you figure \$500 per megabyte of memory and another \$500 for the hard drive, that's \$4,000."

Chuck Wanovsky, vice-president of office systems at Metropolitan Life Insurance Co. in New York, agrees. "You are fighting the wrong battle to make [OS/2] fit on a 286. Seems to me you have to standardize on a 386 as the base desktop machine to take advantage of Systems Application Architecture and Extended Edition."

This will become even more evident once Microsoft and IBM ship a 32-bit version of OS/2 designed to exploit the 386 chip — probably later in 1990. The 286 handles only 16-bit traffic.

Continued on page 44

Doctors operate on global network

ON SITE

BY WILLIAM BRANDL
SPECIAL TO CW

SHERMAN OAKS, CALIF. — Going global with information systems today usually means high-speed systems sharing data via elaborate networks. However, a nonprofit medical research foundation is finding that even the most basic personal computer and networking technology enables them to provide world-class service.

World Research Foundation (WRF) does not do anything fancy, unless you consider on-line database transmissions or indexing scientific periodicals an embellishment. The nonprofit organization uses PCs, modems and a local-area network to maintain information-sharing connections with physicians around the world.

For a \$30 fee, the foundation polls its database, which is indexed to locate the 25 most pertinent articles or reports regarding the query. The group's users pull up a menu and prompt a query from its PC-based relational

database built on Knowledge, from MDBS, Inc. in Lafayette, Ind.

WRF uses Rockwell International Corp.'s Dialogue to connect to more than 400 on-line medical databases from 72 countries, including the U.S., Canada, China, Western Europe and the Soviet Union. Some health care references date back to before the 16th century.

The inquiry must be based on an exact medical term and draws from categories that include treatment and therapy, side affects, history and ideology of the treatment. The query can also be customized for searches among non-standard medical practices such as acupuncture, magnetism or homeopathy.

"It is essentially a service for people, including physicians, who do not have the time to do this kind of research," said Dr. Robert Milne, a physician at Omni Medical Center in Las Vegas. "The value for us is that they bother to continually update their indexes with the latest in medical discoveries using these computer connections," he said.

On the other end of the connections are 72 doctors worldwide who volunteer their expertise, time and PCs to help WRF with this time-consuming task in return for their own informational queries.

Milne was drawn into using WRF's services "out of frustration and desperation" when his 10-month-old daughter was suffering from a chronic digestive disruption. When medicine failed, Milne asked WRF to perform a query, which found homeopathic remedies that alleviated his daughter's medical problem.

"Unfortunately, as a non-profit organization, we cannot use the most state-of-the-art technology," said Dan Kluz, president of Kluz, International and WRF's IS consultant. WRF now uses an IBM-compatible Personal Computer AT as a server to run the Novell, Inc.



Netware LAN operating system and seven other PCs. It normally takes about a week for WRF to compile a package of 25 articles.

Designs on more power

Kluz said that when the budget is less strapped, he would like to move the database on a more powerful server such as a workstation or minicomputer. "But for us, now . . . PC LAN technology is critical," he said.

Kluz is also building an interactive system based on a PC database from Emerald Bay to serve as an "international informational hub." The database will process queries interactively with remote databases from different parts of the world. Currently, WRF's database must query other databases on the network one at a time. Kluz said this database is so efficient that it will cut WRF's present storage requirements in half.

Kluz said he intends to have the California and German offices interactively processing requests within the next year. Data centers are also slated for Chicago, China and South America. "None of this would be possible without today's computer technology," co-founder Stephen Ross said.

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OS/2 Extended

CONTINUED FROM PAGE 39

OS/2 Extended today requires users to have IBM's OS/2 LAN Server and IBM hardware. This means buyers of hardware and OS/2 from Compaq were locked out of Extended Edition, "unless you wanted to buy all those copies of Extended Edition and unbundle it yourself with no guarantee that it will work," said David Flaxman, vice-president of advanced technology at Goldman Sachs & Co. "We've been banging on IBM about that since the day they announced [bundled] Extended Edition."

Once unbundled, "it means that your entry point into IBM's Systems Application Architecture doesn't have to be an IBM desktop with Extended Edition and OS/2 LAN Server," said Lee Doyle, an analyst at International Data Corp. in Framingham, Mass.

Flaxman is not so sure. He said Extended Edition pieces do not reliably run on non-Personal System/2 boxes.

Doyle said IDC estimates OS/2 Extended's penetration of the desktop at considerably less than 1%.

"That's not good," he observed, adding that LAN Manager-based servers, such as OS/2 LAN Server, have not done much better, capturing about 5% of the installed base of network nodes.

All there?

Also delaying sales was a perception that the initial release of OS/2 LAN Server was less than complete. "They haven't had the full product [available]. The key is getting the product out and doing what it is supposed to do," said Chuck Wanovsky, vice-president of office systems at Metropolitan Life Insurance Co., an all-IBM shop.

As such, "it was generally not cost-justifiable to run 8M bytes per user on a 386," Doyle said.

The unbundling is also expected to fuel what has been very poor developer support. "There was a lot of fear that developers would have to write two different versions of [OS/2 LAN-compatible] software," Doyle explained.

However, it could dampen efforts by developers of alternatives to Extended Edition. Faced with the prospect of IBM going its own way with proprietary extensions, Microsoft teamed up with several partners to provide alternatives to IBM's database and communications managers.

Analysts seem to agree that the SQL Server co-developed with Ashton-Tate and Sybase, Inc. is on safe ground. It is shipping and has garnered significant developer support.

However, Trina Grossman, manager of computer operations for Home Express, said that although she's already using SQL Server, she will look at an unbundled Database Manager if it offers a better cost or performance standard.

More up in the air is the future of the as yet unshipped Select Communications Server co-developed with Digital Communications Associates, Inc. (DCA). Doyle and John Dunkle, vice-president at Workgroup Technology, Inc. in Hampton, N.H., noted the product is late and suggested there is an opening here for Microsoft to back away.

"[Unbundling Extended] may not kill it, but it certainly isn't helping. If you can license Communications Manager from IBM, why get it from DCA?" Doyle said.

Sun adds 486 board onto its 386I line

Analysts feel product could set standards for low-end workstations, strengthen PC efforts

BY JAMES DALY
CW STAFF

MOUNTAIN VIEW, Calif. — Intel Corp.'s 80486 microprocessor added another notch to its belt last week when Sun Microsystems, Inc. announced a 486 upgrade board said to offer quadruple the performance of some models of Sun's 386I line. Separately, the workstation maker also chopped prices on 386I systems by 7% to 10%.

Sun officials said they hope to use the

25-MHz 486 upgrade board to attract users who are looking for an easy bridge between DOS and Unix desktop environments.

With the board, users can execute up to 12 million instructions per second (MIPS), compared with the 3- to 5-MIPS range of 386I models, according to Sun.

The 486 has cultivated a crossover strategy in which it has not only built up steam among personal computer makers — IBM, Compaq Computer Corp. and Hewlett-Packard Co. are among its fans

— but also could make the 25-MHz 486 machine the standard for low-end workstations, analysts said.

The upgrade board costs \$4,990 and will be available in the second quarter of next year. Sun officials said they blamed the delay in delivery on extra testing spurred by the discovery of architectural glitches in early versions of the 486 chip.

Price reductions for 386I systems are effective immediately, ranging from a \$2,000 cut for the 386I/250 to a \$1,000 decrease for the 386I/150.



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Back to Turbo Basic's future

BY CHARLES VON SIMSON
CW STAFF

SCOTTS VALLEY, Calif. — Borland International recently backed away from its Turbo Basic compiler and transferred future development rights for the product to the original developer, Robert Zale of Spectra Software, located in Sunnyvale, Calif.

Turbo Basic has not had an upgrade in more than two years, and the transfer of development rights reflected Borland's realization that the organization did not have the resources to continue development of a project that fell largely outside

the organization's strategic product directions.

Zale was retained by Borland in 1985 to develop the high-speed Basic compiler that became Turbo Basic in 1987.

"There were a limited number of projects that Borland could concentrate on, and we wanted to keep the product moving for its large and loyal customer base," Zale said. "It is a valuable product if the publisher can support it." The product has sales to date of more than 100,000 copies.

Spectra Software will market the product as Power Basic and will offer an upgrade in December.

Daly

CONTINUED FROM PAGE 41

ing us a bone, but it's nice to know that the company of the people, by the people and for the people is at least threatening to put its money where its mouth is.

Apple's wobbly warranty is indicative of the entire industry, but it's hardly the worst offender. The start-up software kit for the Prodigy on-line service, for instance, is guaranteed for only 30 days. I've had head colds that lasted longer.

So while every vendor is busy touting reasons to wrap a nice big bow around one of its machines for the holidays, you might want to ask them to stick an extended warranty under the tree while

they're at it. At least a year would be nice.

Look at the facts: Dataquest claims that the 20% to 30% annual growth curve of the PC industry is now in the dumper. Expect that number to tail off to 10% or less. "The days of creating technology and just tossing it out there for people to buy are over," said Dataquest President Manny Fernandez.

The evolution of the computer industry has been a series of battlefields on different turfs. First there was technology, then pricing. With parity achieved in those areas, the next challenge will be customer service.

Most users now readily admit that the warranty offered is as much a consideration as the hardware's capability when making a purchase decision.

And customer service should be more than just a guy who arrives a week after a service call, whistles through his teeth and is pretty good with a screwdriver. It should be an honest commitment from manufacturers who talk a good game that they not only stand behind the machine you just purchased but fully expect it to be around longer than the box it came in.

OK, OK, so maybe I shouldn't expect John Sculley to dress up like Santa, begin ho-ho-ho-ing and then deliver the goods on the warranty scene. He probably figures that since users have swallowed it this long, they'll just wash it down with a little eggnog during the Christmas season. Trouble is, too much eggnog gives me a stomachache.

Daly is a *Computerworld* West Coast correspondent.

MICRO NOTES

Bug found in personnel disk

Knowledgepoint, makers of personnel software, have discovered a glitch in Personnel Policy Expert Version 2.0 or later. Users are affected by the bug *only* if they have created Policy 201 — Employment Categories since receiving or installing the affected versions. Users can call Knowledgepoint at 707-762-0333 for a correction disk.

Mips Computer Systems, Inc. has unwrapped a service agreement with **Tandem Computers, Inc.** under which Tandem will provide on-site service to Mips customers. Mips will still administer all service contracts. The pact will enable Mips to expand service coverage to seven days a week, 24 hours a day.

Dell Computer Corp. recently slashed system prices on its memory expansion products by as much as 63% and cut systems prices up to 16%. The clone maker is hoping the cuts will spur customers to buy more robust systems.

While exhibiting at a recent OS/2 show in London, **IBM** demonstrated a Personal System/2 Model 80 with multiple screens running Presentation Manager. This treats as many as five screens as though they were one very wide screen.

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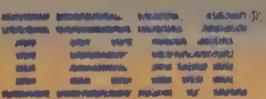
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Keefe

CONTINUED FROM PAGE 39

dentially. But wouldn't Lotus be better off either shaping industry standards with its only rival to the title of micro software kingpin, or at least devoting the same effort to outdoing the competition in the increasingly crowded spreadsheet market? (We'll have to wait for 1-2-3/G to hit the streets before we know whether the latter has been the case.)

Lotus has had a rip-roaring time bashing Windows, but that glass cuts both ways. OS/2 may be the future — but Microsoft expects to ship 11 million units of DOS vs. a hoped-for one million units of OS/2 next year. Now add that 11 million

to the 35.5 million copies of DOS that Microsoft claims to have shipped through July. That's a megadose of DOS. Also note that much of Lotus' installed base continues to cling to DOS.

So, it shouldn't take an accountant to figure out there are bucks to be made here with a Windows version of 1-2-3. And it doesn't take too much effort to find Lotus users who'd appreciate a little support for Windows — "neutered" or not. "I think Windows is a good opportunity," said David Bayer, a software analyst at Montgomery Securities.

Users who want Windows can always switch to Excel, as some have already. The danger here for Lotus is that once started down that path, users are more likely to stick with Excel under OS/2. As

one user pointed out recently, it would be too hard to jump back to 1-2-3/G. Yet Lotus has been so hell-bent on charging into the uncertain future that it has neglected to protect its flanks. After all, when and to what extent will OS/2 and Unix blanket the desktop in the next few years? DOS, faults and all, has staying power.

Lotus isn't totally blind to all this. Company officials have said they will offer Windows if enough customers want it, which is sort of the software equivalent of Compaq saying they'd be fools not to offer Micro Channel Architecture if users yell for it. Believe it when you see it.

Manzi says this may be soon. He reportedly has said that Lotus will offer a "resolution" on its Windows dilemma in

about a month. Meanwhile, the spreadsheet kingpin is said to be surveying users on the subject. Having squared away the future, perhaps Lotus feels it can take less of a hard line toward the present.

Of course, I'd be remiss if I didn't note that there are Windows users who applaud Lotus' stand. One observer, a self-described heavy Windows user, nonetheless is making a substantial investment in OS/2 and doesn't want Microsoft's support for Windows to deter his users from an orderly migration.

But it's not just knocking a particular technology. One developer suggested that Manzi has taken over the role of industry devil's advocate from one-time Bad Boy Philippe Kahn, who evidently has decided that less noise sounds great, and leaves time for more fulfilling pursuits, such as growing the business. Taking on Kahn's former mantle clashes with Manzi's alleged efforts to remake his image into Mr. Nice Guy.

Now, Lotus can always blame the press for highlighting verbal warfare over technology announcements. This was a favorite ploy of Novell and 3Com officials, useful for ducking responsibility for their own public bickering. But it didn't work then, and it won't work now.

Instead, Lotus is beginning to reap a fair amount of abuse back from fellow developers who feel compelled to defend Microsoft. These have even included Oracle, I'm told, which is not exactly best buddies with the boys in Redmond.

Lotus is to be congratulated for serving as the lightning rod that sparked (as in pushed) IBM and Microsoft into getting their acts together and straightening out the Windows vs. OS/2 mess.

"If [Lotus'] intent was to shake up some action and get something demonstrable and meaningful going on with OS/2, then I think it achieved what it wanted," Bayer said. "I think a lot of the right things, [e.g., killing PM Lite], came out of this." Some might say the end justifies the means, but couldn't this have been accomplished with a bit less vitriol?

Keefe is *Computerworld*'s senior editor, PCs and workstations.



Mitron's STD 6250 provides an efficient method for sending and receiving data anywhere in the world. STD 6250s communicate with each other and with other companies' bisynchronous terminals and computers.

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MITRON
Systems Corporation

2000 Century Plaza, Columbia, MD 21044

Platform

CONTINUED FROM PAGE 41

Some users, such as Mark Teflian, vice-president and chief information officer at Covia Partnerships in Rosemont, Ill., take a more qualified approach. "It really depends on what you are doing on the desktop," he said. "If you are just doing I/O spooling using 2 megs of memory, than a 286 is fine. If I need remote operability, I won't have enough memory [under that setup]."

Then again, he said there are some applications where a user may want to run Windows 3.0 on a 386, such as doing sophisticated caching on a file server with images on CD-ROM.

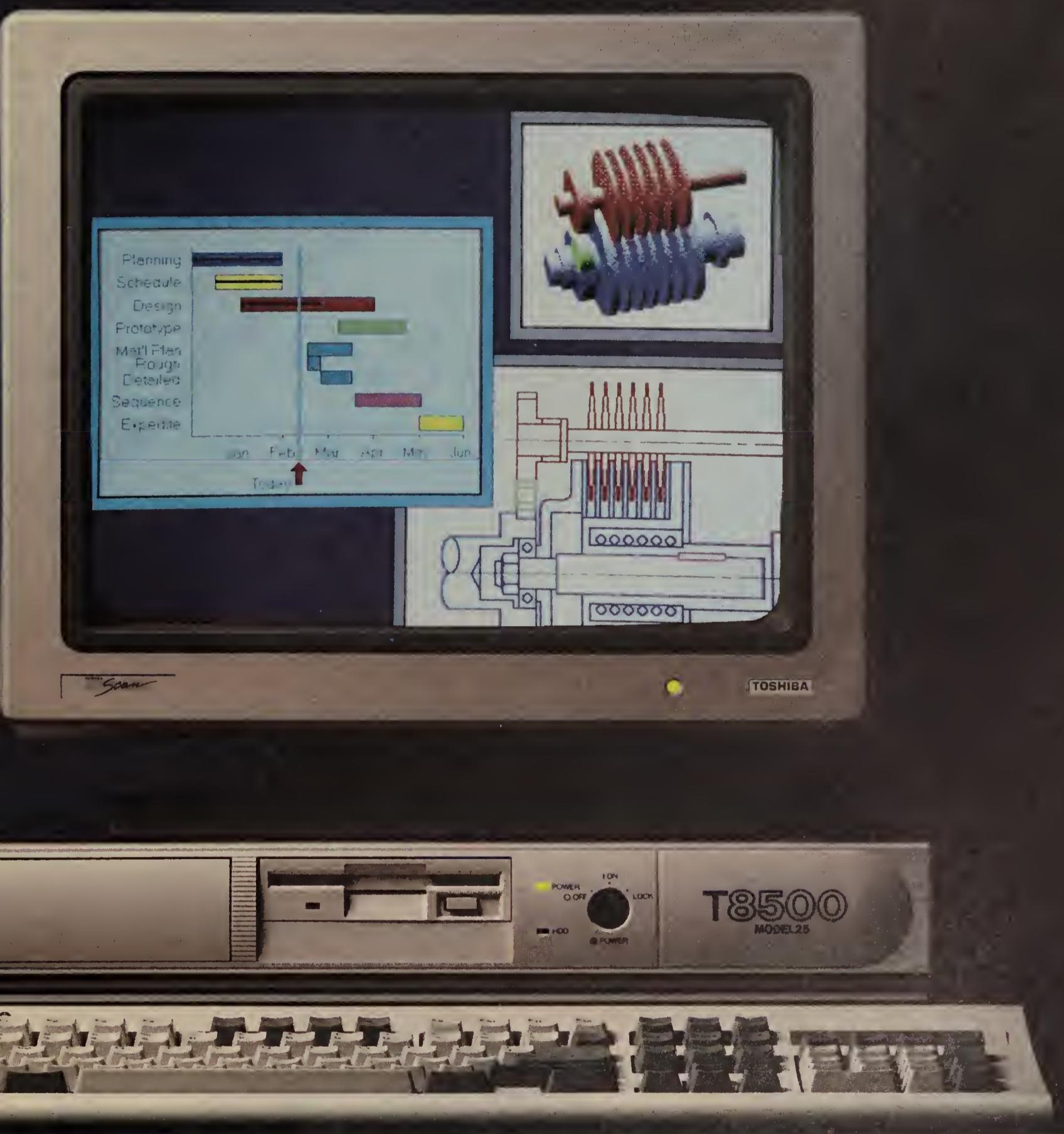
David Bayer, a software analyst at Montgomery Securities, Inc., suggests that the confusion over whether to run OS/2 on a 286 may go all the way back to the initial design of the operating system. "Microsoft reportedly wanted to hold off for the 386, but IBM wanted backwards compatibility for the 286. IBM's point of view prevailed," he said. "Being a Monday morning quarterback, [a lot of] people think the 386 should have won."

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In Touch with Tomorrow
TOSHIBA

Colorful solution to stripping

Workstation package saves steps in color separation for hefty price tag

BY RICHARD PASTORE
CW STAFF

Stripping may soon be a term confined to shady clubs in red-light districts. Eliminating this

time-consuming step from the printing preparation process is the goal of both prepress shops and their customers. A new workstation-based conversion system from Hell Graphics Sys-

tems, Inc. is designed to do so without sacrificing quality.

However, the trade-off will be a steep price for users in the pre-press industry, which comprises firms that handle preliminary

processing of artwork and pages for magazines and newspapers.

Available in January, Hell's Scriptmaster takes design files created with desktop publishing systems and converts them to files readable by Hell's Chromacom color separator. The conversion allows files to go from creation on the personal computer through to the final steps of color separation and page make-

up without any intervening stripping.

Stripping is the tedious process of cutting and fitting layers of color film that make up the full-color elements of a page design.

Scriptmaster takes over this job, converting the image colorization, positioning and cropping instructions into commands that are readable by Chromacom. The Chromacom machine then processes these commands to produce fully integrated page mechanicals that are ready for the presses.

Limited applications

The system consists of proprietary software bundled with a Hewlett-Packard Co. Apollo workstation running Unix. The system sits between the Chromacom machine and Apple Computer, Inc. Macintosh and/or IBM-compatible PCs, which act as front ends for desktop-designed layouts.

The Macintoshes and PCs are linked to Scriptmaster by Apple's Appletalk network and RS-232 serial connections, respectively.

New York-based color-separation shop Imaging International, Inc. has added a beta-test version of Scriptmaster to its Hell installation. The firm is using smaller client jobs to test and coordinate Scriptmaster's capabilities.

Steve Messner, the firm's desktop specialist, said the system does bypass stripping without sacrificing color-reproduction quality. However, it is not well suited to processing the very complex graphical special effects of the type that adorn the pages of computer magazines, he said.

The good, the bad

According to Imaging President Jeffrey Randazzo, the system's key advantages are time savings and increased productivity. It will halve the time necessary to produce high-definition color separation jobs complete with text and graphics, he said.

Scriptmaster will not likely save on costs, however. "Unfortunately, the equipment cost jumps from that of a \$500 light table to a half-million-dollar digital system," Randazzo said.

Yet Scriptmaster, to his knowledge, is the only technology on the market that accepts files based on the open standard of Adobe Systems, Inc.'s Postscript.

Scitex Corp.'s Visionary is similar, but it is a closed system that accepts files only from a modified version of Quark, Inc.'s Xpress, he noted.

Imaging staff were trained to operate Scriptmaster in less than a day, Messner said. "A day's familiarity with file-naming procedures and a few Unix commands were all that was necessary," he said.

IPL Offers the Full Range of AS/400™ Memory.

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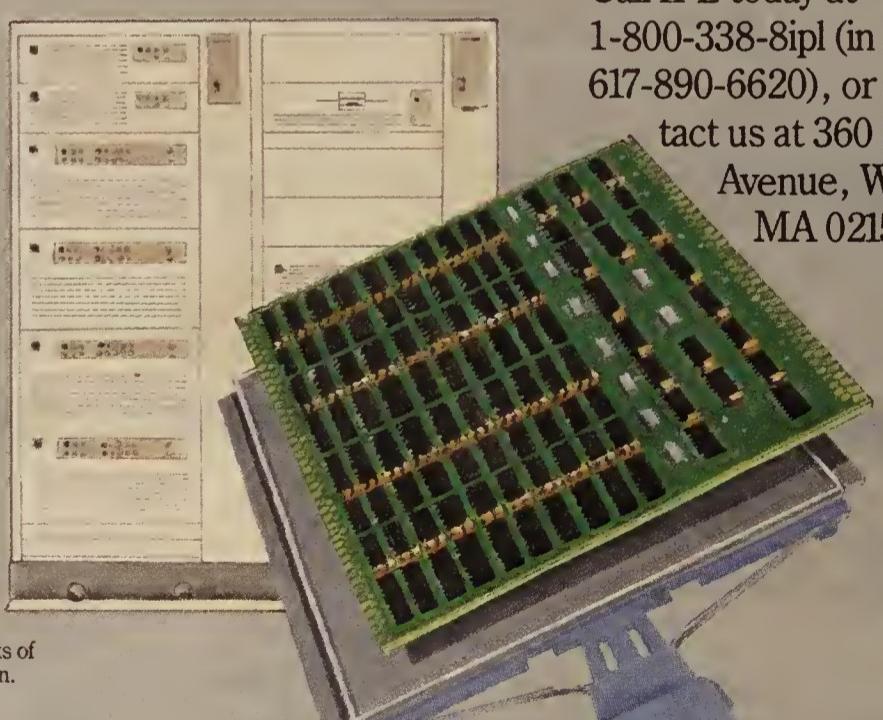
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NEW PRODUCTS

Systems

Epson America, Inc. has introduced an Intel Corp. 80386SX-based system. According to the company, the Equity 386SX operates at 16 MHz and includes a security system that requires users to enter a password when the CPU is turned on.

The system is available in three configurations. Each comes with a 3½-in. 1.44M-byte floppy drive and the choice of no hard drive, a 40M-byte hard drive or a 100M-byte drive.

The announced pricing for these systems is \$2,299, \$3,299 and \$4,299, respectively.

Epson
23530 Hawthorne Blvd.
Torrance, Calif. 90505
213-539-9140

Memorex Telex Corp. has announced an Intel Corp. 80286-based IBM Personal Computer AT-compatible system.

The 7025 Intelligent Workstation uses a 12.5-MHz Intel 80286 processor and comes with 512K bytes of random-access memory. An IBM Video Graphics Array adapter, fixed disk interface, two serial ports, one parallel port and a mouse interface are incorporated on the motherboard. Two expansion slots, one 16-bit and one 8-bit, are available.

The price for the standard configuration with a 3½-in., 1.44M-byte floppy disk drive and an 84- or 101-key keyboard is \$1,995.

Memorex Telex
4343 S. 118th East Ave.
Tulsa, Okla. 74146
918-624-4100

Software utilities

Commtech International, Inc. has announced a terminate-and-stay resident software utility designed to work with personal computer facsimile boards compatible with the Digital Communications Associates/Intel Communicating Applications Standard.

PC Quickfax allows the user to fax a file from an application anywhere on a disk or on-screen. The program is accessed through the use of a "hot key" and consumes 32K bytes of memory.

The price for PC Quickfax is \$49.

Commtech
Suite 150
2580 Cumberland Pkwy.
Atlanta, Ga. 30339
404-438-9999

Inner Media, Inc. has unveiled the latest version of Collage Plus Publishing Utilities.

According to the company, Collage Plus allows users to capture screen images from any application for import into publications, and it provides a means of organizing collections of images. The program supports Lotus/Intel/Microsoft Expanded Memory Specification 4.0 memory, which allows Snap to reside in 16K bytes of system memory.

The program is available at a retail price of \$89.95.

Inner Media
60 Plain Road
Hollis, N.H. 03049
603-465-3216

Easysoft, Inc. has released a file and drive program utility designed to perform various DOS functions without the use of DOS syntax.

DOS Partner automates and replaces DOS commands, allowing users to run applications with a single keystroke. The DOS Partner program will format floppy disks, copy, move, rename or delete directories and perform other DOS functions as well.

According to the company, DOS Partner has a retail price of \$99 and is available immediately.

Easysoft
Suite B-100

1215 Hightower Trail
Atlanta, Ga. 30350
404-992-4140

Peripherals

Mouse Systems Corp. has introduced a high-end optomechanical mouse that offers a base resolution of 350 char./sec., the company said.

Called The White Mouse, the device is bundled with a proprietary power-panel utilities software package designed to enhance the interface to IBM Personal Computers, Personal System/2s and compatible machines. An applications tool kit is also included for creating personalized menus for custom applications. The output device retails for \$119.

Mouse Systems
47505 Seabridge Drive
Fremont, Calif. 94538
415-656-1117

The Hedman Co. has announced a check-writing protection system designed to protect against possible forgeries.

The PC Checkwriter is a compact unit designed to interface with microcomputers and dot-matrix printers to produce complete, microcomputer-generated checks, the company said. The product can accommodate as many as four different types and sizes of checks or documents. It features an executive lock and key, an automatic void function to protect against missing or exceeding dollar

Continued on page 50

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AT&T
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Continued from page 49

amounts and a non-resettable counter to keep track of all checks passed through the system. It carries a retail price of \$17.95.

The Hedman Co.
1158 W. Armitage Ave.
Chicago, Ill. 60614
312-871-6500

Sharp Electronics Corp. has announced a \$1,000 price reduction for its midrange desktop color scanner.

The JX-300, a color scanner targeted specifically for business use, now carries a \$3,995 price tag. The device reportedly scans 8½ by 11-in. originals at resolutions up to 300 dot/in. Interface boards for the IBM Personal Computer AT and compatibles and the Apple Computer, Inc. Macintosh computer are available directly from Sharp.

Sharp Electronics
Sharp Plaza
Mahwah, N.J. 07430
201-529-9500

Hyundai Electronics America has announced three 14-in. IBM Video Graphics Array color monitors.

The HCM-401 is said to be IBM 8512 compatible with a range of 256 colors. It has a resolution of 720 by 400 pixels in text mode and 640 by 480 pixels in graphics mode, the vendor said. The HCM-401D provides a dot pitch of 0.31mm and is priced at \$645. The HCM-401S, with a dot pitch of 0.41mm, is available for \$595. The monitors carry Hyundai's standard 18-month warranty.

Hyundai Electronics
America
166 Baypointe Pkwy.
San Jose, Calif. 95134
408-473-9200

A four page/min., 300 dot/in. small-size printer has been added to the Hewlett-Packard Co. family of output devices.

Dubbed the HP Laserjet IIP, the product is aimed at business users who need or want their own laser printer.

The unit weighs 25 pounds and comes with 512K bytes of memory, two slots for memory upgrade boards and 14 internal fonts.

The printer is priced at \$1,495.

HP
3000 Hanover St.
Palo Alto, Calif. 94304
415-857-1501

IBM has announced price reductions for three members of its Proprinter product line. The changes were effective Sept. 5.

Pricing for the IBM Proprinter III has dropped from \$699 to \$649; the Proprinter II XL decreased from \$799 to \$749; and the Proprinter III XL has dropped from \$925 to \$849.

IBM
Old Orchard Road
Armonk, N.Y. 10504
914-765-1900

A desktop scanner for use with both IBM Personal Computers and compatibles and Apple Computer, Inc. Macintosh machines is now available from Dest Corp.

Dubbed the PC Scan 3000, the product provides a 300 dot/in. scanning resolution with up to 256 levels of gray-scale capture, the company said. An optional text processor board is available for converting fonts directly into ASCII or word processing formats, and the product is of-

fered with the vendor's Text Pac application support software.

The scanner is priced from \$1,595.

Dest
1015 E. Brokaw Road
San Jose, Calif. 95131
408-436-2700

Board-level devices

Deico Electronics, Inc. has introduced an 8-bit IBM Video Graphics Array adapter board.

The DVGA is reportedly a half-slot, IBM Personal Computer XT-style card that works with most digital and analog monitors. It is BIOS- and register-level compatible with all popular graphics standards and offers high-resolution text

modes of up to 132 columns by 60 lines for displaying large spreadsheets and word processor documents, the company said.

The board is priced at \$395.
Deico Electronics
2800 Bayview Drive
Fremont, Calif. 94537
408-651-7800

Sigma Information Systems has announced a 12M-byte memory board for Sun Microsystems, Inc. Sun-3/E computers.

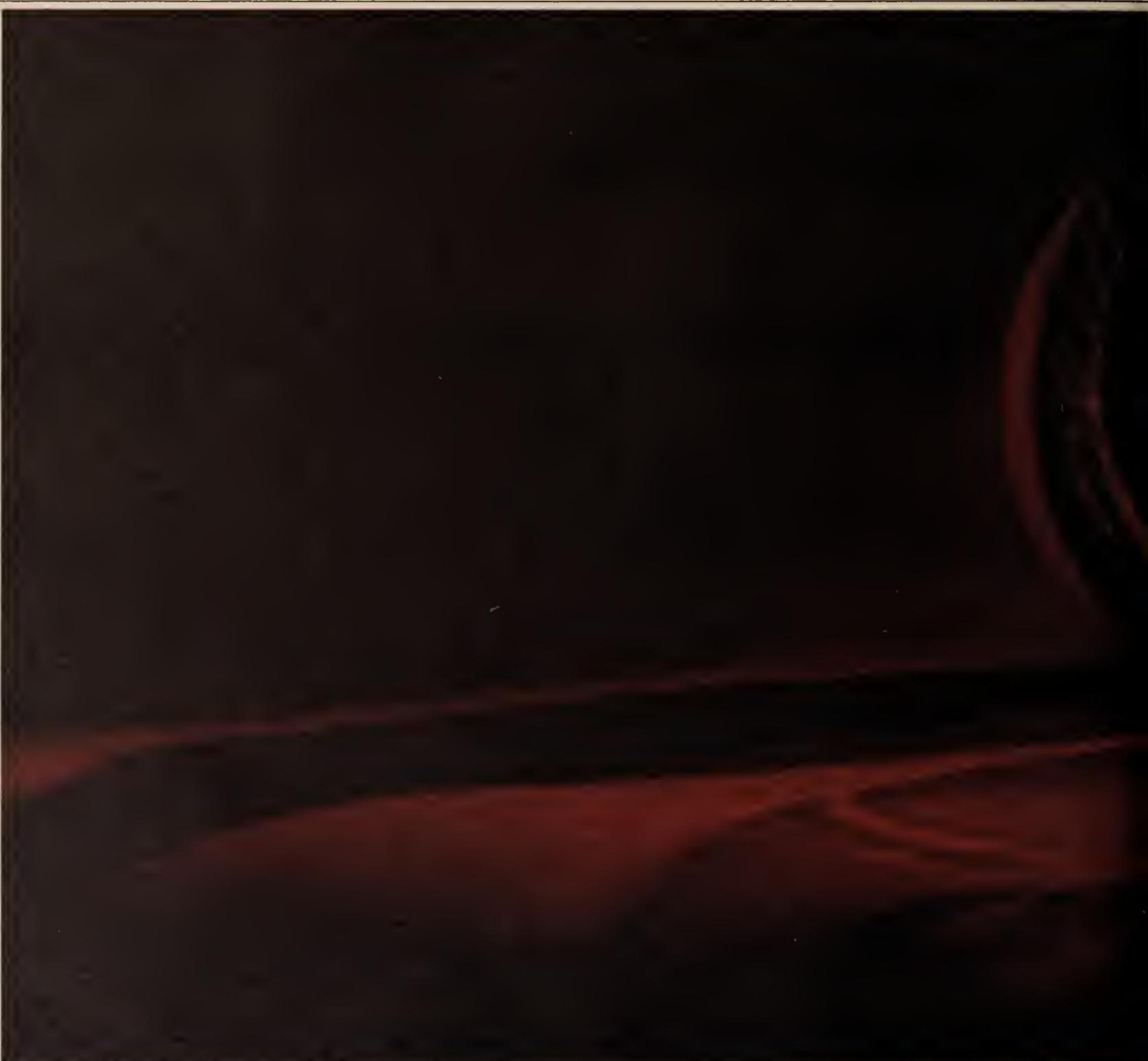
The SM-12MB/3E reportedly allows a user to expand the computer's base memory of 4M bytes to 16M bytes using one expansion slot. A 4M-byte version of the board is also available.

The list price of the 12M-byte board is \$6,795. The 4M-byte board is priced at \$2,975.

Sigma
3401 E. LaPalma Ave.
Anaheim, Calif. 92806
714-630-6553

Imaging Technology, Inc. has introduced a high-resolution version of its Series 151 image processing subsystem that provides 1,024 by 1,024-pixel image acquisition, the company said.

The High-Resolution Series 151 image processor operates with IBM Personal Computer ATs, Personal System/2s or Sun Microsystems, Inc. workstations. Packaged as a subsystem of Series 150 modular image processing boards, the



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product is targeted for image analysis, medical imaging and university and military research image-processing systems. It is priced at \$28,990.

Imaging Technology
600 W. Cummings Park
Woburn, Mass. 01801
617-938-8444

New Media Graphics Corp. has announced a digital video board for the Sun Microsystems, Inc. Sun386I workstation.

Called Video Windows, the add-on board plugs directly into the AT slot of the workstation to provide full-motion or still-frame video in a user-defined window, the vendor said. Input can come from a camera, videocassette recorder, videodisc or cable television.

The product is priced at \$1,795 and quantity discounts are available.

New Media Graphics
780 Boston Post Road
Billerica, Mass. 01821
508-663-6678

Unix software

Tronix International Data Corp. has announced a Unix/Xenix kernel debugger that runs on The Santa Cruz Operation's V/386 and Xenix/386, Interactive System's 386/IX, Everex Systems, Inc.'s Xenix and AT&T Unix System V, Release 3.2.

The Tronix Kernel Debugger reportedly allows the system software engineer to control the execution and environment

of software within the Unix/Xenix operating system and includes display information and execute function call capabilities within the Unix/Xenix kernel. It sells for \$475.

Tronix International
Suite 216
10601 S. DeAnza Blvd.
Cupertino, Calif. 95014
408-973-8550

Software applications packages

Deerfield Systems, Inc. has announced an update to its Displayform form-processing software.

According to the company, Displayform II Version 5.0 includes data com-

pression, on-line help and the ability to look at enlarged sections of a form or the complete form.

The announced list price of the package is \$495.

Deerfield
221 Elizabeth St.
Utica, N.Y. 13501
315-797-1805

An escrow account management software package has been introduced by Real-Time Computer Services, Inc.

According to the vendor, The Escrow System was designed to help banks attract and retain law firms' escrow accounts. The product reportedly allows law firms to produce comprehensive accountings of client escrow funds, including complete auditable trails and ledgers. An MS- or PC-DOS environment and a hard disk are required.

The package costs \$249.

Real-Time Computer Services
475 Ashford Ave.
Ardsley, N.Y. 10502
914-693-7000

Vycor Corp. has announced the release of three new software tools intended to help manage data processing assets.

The products are LAN Mapper, for creating computer-aided design (CAD) layouts of local-area networks; Configuration Planner Lite, for creating CAD layouts of data center space; and Library Manager, for archiving computer files and their storage media.

According to the company, LAN Mapper has a price of \$995, Library Manager lists for \$495, and Configuration Planner Lite is priced at \$495.

Vycor
8201 Corporate Drive
Landover, Md. 20785
800-888-9267

Corporate Business Software has announced the introduction of a software package that combines business graphics and mapping in one program.

Demografx includes 16 graph types, U.S. state, county and three-digit ZIP code maps, as well as a world map with national borders. The software runs on IBM Personal Computers and compatibles and is designed to eliminate the need for separate graphics and mapping packages.

Corporate, site and local-area network licenses are available for \$15,000, \$10,000 and \$6,000, respectively.

Corporate Business Software
Suite 160
171 Elden St.
Herndon, Va. 22070
703-478-2191

Reference Software International has announced the latest version of its personal computer-based proofreading package.

Grammatik IV works with 33 word processors and desktop publishing programs to check documents for errors in grammar, style, usage, punctuation and spelling.

Users can customize the program to ensure consistency in correspondence from specific groups, departments or businesses.

The retail price of Grammatik IV is \$99.

Reference Software
Suite 123
330 Townsend
San Francisco, Calif. 94107
415-541-0222



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Thomas L. Nolle

A bale full of buzzwords



Integrated Services Digital Network (ISDN) has gotten a lot of attention because it standardizes how users' equipment can gain access to information channels with reliable digital communications at higher rates than modems now support. But ISDN is one of many buzzwords tied to the promise of a completely new information environment; others include "Sonet," "frame relay" and "ATM."

The carrier communications environment today supports two different kinds of information flow. Packet switching offers low information transfer costs and is insensitive to distance, but in an environment characterized by end-to-end delays that are both long (180 msec, on the average) and variable. The alternative transmission technology, the time-division multiplexing (TDM) used in the telephone network, dedicates a 64K bit/sec. path to all traffic, regardless of rate or the intermittent nature of the information flow.

As demands for bandwidth increase, every element in today's carrier-based communications environment is being

Continued on page 63

Networking enters adulthood

Robert M. Metcalfe, 3Com Corp. founder and vice-president of marketing, was the principal inventor of Ethernet at Xerox's Palo Alto Research Center in the early 1970s. Computerworld Senior Correspondent Charles von Simson spoke with him recently about the competitive environment facing his firm and the issues that affect networking as a whole.

In terms of a human life, where is the development of mature network management? An infant? A teen-ager?

We are going into graduate school. 3Com has network management products, and we have had them for years. We have had our cheap thrills as adolescents do, but now we're adults and have to do the hard work.

There are two winning strategies. One is to just use IBM; the other is implementing multivendor network strategies. In multivendor environments, four standards are important: CMIP (Common Management Information Protocol), CMOT, SNMP (Standard Network Management Protocol) and Netview. Last year we tried to kill SNMP. We reasoned that it wasn't a TCP/IP (Transmission Control Protocol/Internet Protocol) standard, and we tried to implement the OSI (Open Systems Interconnect) standard, CMOT.



3Com's Metcalfe sees two winning strategies

Our feeling was, let's just go to CMOT. But the marketplace decided that SNMP was needed.

CMIP is the ultimate. It is the next major standard under OSI, and it is the one that every major vendor needs to do to make sales to the U.S. government, the Japanese and a number of other fairly significant accounts. Netview is needed for IBM, SNMP is back-fill, CMOT is an important transition, and CMIP is the long-term answer.

Given the clear direction, why is it taking so long for standards to emerge?

That question leads directly into the morass of OSI. When CMIP-based network management products are available, they will solve the problems most users have. Today there are not enough CMIP products. Users are not rushing to them, and so there is not enough user commitment to get vendors moving quickly. It is not a technological problem; it is a critical mass phenomenon. We are getting there.

What signs tell you that you are getting there?

For the longest time, people would attack the Corporation for Open Systems, of which I am the chairman, saying that committee standards such as OSI were ridiculous and that de facto standards driven by the marketplace were the only solution. The at-

tacks are different now; people are saying they don't need any more educational efforts on OSI, they need more products. The critics are moving toward OSI being inevitable. Even Novell, one of the most vocal critics, has joined the Corporation for Open

Systems. If 3Com and Novell can agree, it's got to be true.

Why is there a growing trend among users to 'grow their own' net management systems?

People out writing their own systems are possibly wasting a lot of energy they could save by waiting for vendor solutions.

Continued on page 61

Forum's forces advance in quest for fiber ring

BY JOANIE M. WEXLER
CW STAFF

NORTH BILLERICA, Mass. — If the crusade of the recently formed SMT Development Forum is successful, the emerging Fiber Distributed Data Interface (FDDI) standard will include specifications for managing an entire FDDI ring — and this week's standards committee meeting in San Diego will be one of the last.

The forum aims to incorporate additional functionality into the Station Management (SMT) component of the FDDI standard to allow multivendor interoperability among FDDI implementations and accelerate the close of the long-debated standard.

Ten companies currently belong to the forum: Advanced Micro Devices, Inc.; Apple Computer, Inc.; CERN, the European Laboratory for Particle Physics; IBM; Interphase Corp.; Lawrence Berkeley Laboratory; National Semiconductor Corp.;

SBE, Inc.; and Synernetics, Inc.

The SMT portion of the FDDI standard controls the physical connection of a station to the 100M bit/sec. dual counterrotating ring, and the currently used version — SMT 5.2 — allows network stations to be managed through their entire seven-layer Open Systems Interconnect (OSI) protocol stacks. A network management system running in layer 7 — the application layer — on a host continually polls through all seven data layers to the management process of each station and back through the host's protocol stack. This method therefore

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Inside

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- Timeplex does field service shuffle. Page 60.
- Scientific-Atlanta outlines VSAT goals. Page 62.

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- network support

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EDIT1 D:\COBOL\SOURCE\OFXCALL.COB          COLUMNS 0001 0072
COMMAND --> f p'<ICS' .a .b             SCROLL --> HALF
000062                                     FIN.
000063                                     GO TO CICS-CONTROL.
000064                                     READ-INPUT.
000065                                     EXEC CICS HANDLE CONDITION MAPFAIL(NOTFOUND) NOTFND(NOTFOUND)
000066                                     ERORRORS(NOTFOUND) DUPREC(DUPREC) END-EXEC.
000067                                     EXEC CICS RECEIVE MAP('XDFHCMB') END-EXEC.
000068                                     IF EIBTMID = 'UP01' THEN
000069                                         EXEC CICS READ UPDATE DATASET('FILEA') INTO(FILEA)
000070                                         RIDFLD(MNUB IN COMMAND) END-EXEC.
000071                                     IF FILEER5 IN FILEA NOT = FILEER5 IN COMMAND THEN
000072                                         MOVE 'FILE ALREADY UPDATED - REENTER' TO MSG10
000073                                     END-IF.

EDIT2 D:\COBOL\SOURCE\= COB          COLUMNS 0001 0072
COMMAND -->                               SCROLL --> HALF
NAME   EXT      SIZE    CDATE      TIME
ADDENTRY COB    7680  01/12/87  12:42p
ADDLNU COB    2560  03/26/86  8:02a
ASKRNGR COB   1536  03/29/86  18:33a
ASKTOP COB    1536  11/25/85  11:07p
CHGSEL COB    6144  01/12/87  12:48p
CXDATE COB    1024  01/07/86  8:11p
DBPACX COB   2048  10/30/85  9:47p
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Plotter emulation	✓ standard	optional
Resident fonts	✓ 10	6
Font card size***	✓ credit card	"8-track" cassette
Standard weight	✓ 33 lbs.	50 lbs.
Parts***	✓ 400	1000
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Aetna eyes benefits of Tariff 12

BY ELISABETH HORWITT
CW STAFF

HARTFORD, Conn. — Aetna Life & Casualty recently signed a \$30 million, three-year contract that keeps its data and inbound voice transmission services with AT&T but moves them under the carrier's customized Tariff 12 offering.

Aetna expects to benefit from the move by recording significant savings to the annual telecommunications budget, and through added value that AT&T offers to make Tariff 12 attractive, according to Aetna Assistant Vice-President of Telecommunications John Donovan.

Tariff 12 provides unique opportunities for the customer to get exactly what it wants in areas such as accounting and network management, Donovan said. For example, Aetna will be able to tell AT&T just how it wants its bills prepared and specify the frequency and level of reporting that AT&T provides on network traffic and error levels, Donovan said.

In terms of the network services themselves, "We will wind up using just about any digital offering AT&T has," including full and fractional T1, dedicated and switched connections, Donovan said. However, AT&T will provide those services under different tariff names, "even

though if you looked down from the air, you would say we were using Accunet Spectrum or Digital Services" or whatever the equivalent was in a regular tariffed service, Donovan said.

Aetna had not decided beforehand to divide its network traffic between two vendors, Donovan said. AT&T won Aetna's data and inbound voice traffic in a competitive bid, just as MCI Communications Corp. won the outbound voice traffic approximately a year ago, he added. MCI and AT&T will have about a 50-50 share of Aetna's budget for long-distance networking services, Donovan said.

Other vendors were competitive in terms of cost, but AT&T "was more satisfactory in terms of meeting our requirements, particularly in terms of network

features and functions," Donovan said. While network management offerings will be a part of Aetna's deal with AT&T, the insurance company has not yet determined whether it will use AT&T's Accumaster Integrator, Donovan said.

"We're a fairly large IBM-based shop, with a fairly large number of Netview users. We also have a lot of non-IBM minis. We need a network management scheme to handle it all, and Accumaster is apparently a slick way of doing it, but we haven't jumped into that pond yet."

Forum

CONTINUED FROM PAGE 53

depends on all layers in all stations being in good enough working order to keep communications flowing.

The approach now being advocated by the SMT Development Forum requires only layers 1 and 2 to be intact to allow network management of an entire FDDI ring, because communication flows only through the station manager, physical and media access control layers on each station — the only layers specified by the FDDI standard — rather than through the entire seven-layer stacks.

The enhanced SMT would not address network management at the upper layers, which would handle management across networks.

The SMT Development Forum is the brainchild of Bruce McClure, president of Synernetics, a North Billerica, Mass., start-up firm targeting FDDI as its main business. McClure advocates event reporting by all stations on the FDDI network to the network manager, as opposed to continual polling by the host.

"It wouldn't be very efficient for a doctor to constantly call all his patients and ask them if they were sick," he explained. "It makes much more sense for the sick patient [the station] to contact the doctor [the network manager]."

McClure is optimistic that the SMT protocol issue will be settled at the February 1990 SMT working group meeting of the American National Standards Institute's X.3T9.5 FDDI committee. SMT is the fourth and final component that must be decided before the FDDI standard, which has been under development since 1982, is complete.

While few would argue with the principle that additional network management capabilities are a good thing, introducing another element for working group members to agree on could slow down, rather than accelerate, SMT's sign-off, according to at least one FDDI vendor.

"To oppose the network management hooks would be like turning against Mom and apple pie," commented Hal Spurley, director of marketing at Fibronics International, Inc., which has more than 400 FDDI nodes installed.

"But if we don't close the standard soon, we'll have the same situation we did with Ethernet, where there are millions of dollars out in the field before we have a standard."

According to McClure, however, "Ignoring the network management issue will just bring us back to it six months from now. It's important that the standard closes — but when it does, it should work."

Spurley indicated that he is not as optimistic as McClure that the SMT issue will be settled as early as February.



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The 4174 11L supports 64 coax and 24 ASCII devices plus a token ring.
new plane of efficiency, going beyond plug-compatibility to a sophistication in connectivity which represents a value in itself, not just a workaday necessity.

For example, for bulk file transfers between hosts, the LinkMaster 6100C network processor allows files on a host to be sent quickly and effectively to not just one, but multiple hosts in multiple locations.



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DATA

Timeplex offers soup-to-nuts service

BY JOANIE M. WEXLER
CW STAFF

WOODCLIFF LAKE, N.J. — The "we do chicken right" philosophy is one that apparently does not pervade the corridors of Timeplex, Inc. In addition to its core business of manufacturing and marketing networking products, the company recently did some field-service reshuffling and created a formal in-house consulting group to embrace the gamut of networking activity — from administrative network planning to corporate headhunting.

Users of Timeplex and other vendors' products can mix and match the planning and headhunting services with three others: network optimization for designing network topology and choosing products, network "staging" for testing network equipment before it is installed and 24-hour monitoring performed by the company's existing Comwatch service.

Timeplex has offered all five services to some degree for the last two to three years. The company decided to officially form the Timeplex Professional Services group because of grow-

ing customer demand for the network consulting expertise, according to Ron Weiger, manager of service marketing at Timeplex.

Weiger said customers of "all sizes and experience levels" are likely to call on Timeplex for consulting. "We are seeing more medium-size and small owners of private networks that are brand-new to the industry as desper-

TIMEPLEX will then "fine-tune" the employee into the customer's environment.

ately needing a vendor to guide them," he said. "Even some of our larger accounts are looking at controlling expenses and turning over more of the technology planning process to an expert."

The Net-Search recruitment component is the most divergent contributor to the company's one-stop-shopping orientation. Timeplex taps the channels it uses for recruiting its own engineers to locate Help desk opera-

tors, supervisory personnel, network managers and other employees for its clients, according to Weiger.

Timeplex screens applicants with networking backgrounds and presents finalists to the customer, who makes the ultimate selection. Timeplex will then "fine-tune" the employee into the customer's environment, which includes recommending a Timeplex training program.

For employees placed in networking environments that do not include Timeplex equipment, according to Weiger, the training programs would be generic in nature, covering such topics as Integrated Services Digital Network (ISDN) and tariffing issues in a tutorial manner.

"We really have not found another vendor who provides a recruitment service," said Weiger, who describes the offering as the "backbone" of the two on-site programs — administrative network planning and network optimization. He said the company has provided consulting services to nearly 50 different customers during 1988 and 1989, and, currently, 10 to 15 customers are using the Comwatch service, introduced in early 1989.

BIT BLAST

SME sets second Enterprise Networking Event for 1991

The second Enterprise Networking Event has been scheduled for May 21-23, 1991, in Baltimore. Like the first Event in June 1988, it is designed to demonstrate multivendor interoperability using industry standards such as Open Systems Interconnect. The Society of Manufacturing Engineers is sponsoring the event.

Wang Laboratories, Inc. subsidiary **Intecom, Inc.** successfully completed an ISDN field trial in which its Integrated Business Exchange system sent simultaneous voice and data over Primary Rate Interface ISDN connections via AT&T's 4ESS switch.

U.S. carriers will not begin to install broadband ISDN in volume until 1998, according to a recent study by **Trans-Formation, Inc.** The broadband version of the telecommunications standard, which will support transmission rates of 155M bit/sec., is not due to be finalized until 1992, according to the Tulsa,

Oklahoma, research firm. In addition, full deployment will have to wait for local telephone companies to implement fiber-optic cabling all the way to users' premises, Trans-formation said.

Siemens AG has entered an agreement to manufacture, market and distribute high-speed metropolitan-area networking (MAN) products from **QPSX Communications Ltd.**, with emphasis on Europe and North America. The Australian company's products are said to transmit voice, data and video at up to 140M bit/sec. Its technology is being incorporated into the IEEE 802.6 MAN standard, which eventually will migrate to the Broadband ISDN standard.

Rivals **Picturetel Corp.** and **Videoconferencing Corp.** successfully demonstrated interoperability between their respective video-conferencing systems complying with the Px64 protocol. The Px64 is scheduled to be formally adopted as an international protocol by CCITT next July.

On January 10th, we had the first party.



Networking

FROM PAGE 53

Keep in mind three choices: Wait and do nothing, buy what the vendors have today, or do it yourself. I am arguing that to do it yourself is a waste of time. [Given that it is] so hard a problem, why does Goldman Sachs or Union Carbide or any company think they can do it faster?

Look at the 802.4 MAP token bus standard developed by General Motors. It is the biggest failure of this century. They took bad advice and went out and built their own standard, and now they have to live with the problem. The design was silly and very expensive.

In addition, I don't think there are really that many people building their own systems — writing their own code. A lot of people who say they are doing it are just doing floor layouts — a server here, a station there, building a logistical plan.

In your most recent set of announcements, you said that 3Com will have a network multiprocessing product by summer 1990, but there is no development effort or buy-build decision in place yet. When

will customers begin to see announcements closer to shipment dates?

It is only going to get worse. The complexity of all products is only going to go up. Most customers also want to know product plans a year or two in advance.

There are also aspects that are competitive. When you watch Novell beat you with announced products, you have got to react. In the multiprocessing area, we saw this technology was possible and said we were going to do it. We don't want to be punished by not announcing early. In fact, the announcement was earlier than I would have liked, but it has become a competitive necessity.

Could you have made the announcement without the existence of Parralan (the multiprocessing board start-up founded by Charlie Bass)?

No. We had to be able to know that it was possible to deliver. We have not made any decision on whether to develop in-house or go out and buy the technology. But you have to be careful not to jump the gun on the usefulness of multiprocessing. No one has actually bought it yet; the technology has not been useful to anyone. A lot of this multi-

processing stuff is a pig in a poke.

It is hard for anyone to actually deliver on their multiprocessing promise, and a lot of people have broken their picks on the problem of actually delivering any value. It is really a large technical problem to get processors to cooperate. A lot of the claims are snake oil.

For us, it is sizzle. We have stooped to delivering sizzle.

How did 3Com's competitive position change based on the recent announcement by IBM and Microsoft on the convergence of LAN Manager and LAN Server?

I do not know much about the specifics of their announcement. But we will play to the same strengths in selling against IBM that have worked for us in the past — multivendor connectivity with environments such as the Macintosh and TCP/IP.

In addition, there is a basic transition under way for us and the software base. In the DOS world, Novell won, but in OS/2 you see an operating system designed from the ground up for networks.

We went along with that, figuring networking was no longer an afterthought. We decided to throw in with Microsoft.

Are network hardware products such as bridges, routers and adapters commodity products, where customers should simply look for the lowest price?

"Commodity" is an overused word. Prices are coming down, and for most vendors, gross margins are coming down. Even with competition increasing, our gross margins are not coming down. But prices are so low that the raw price of the hardware

When you were developing Ethernet and thinking about allowing computers to communicate efficiently, did you envision how this part of the industry would grow?

I made the classic mistake. I was optimistic in the short term and pessimistic in the long term. I declared 1982 to be the year of the LAN. It didn't really take off until later.

At the same time, I did not re-

"I HAVE BEEN predicting that Ethernet would be obsolete in 1993; now I think it will be the late 1990s."

ROBERT METCALFE
3COM

and the cost of shipping are as much as the cost of installation.

The low-cost suppliers want you to believe it is a commodity market because then they win. We are never going to be the price leader. But when you look at the price bombers like Western Digital, keep in mind that the difference in price is typically less than the cost of a service call. When people look at it that way, they aren't as price-sensitive.

alize how MIPS per dollar would explode. That was what generated the demand for LAN MIPS, and it will dissolve the slower LANs. There is ever-increasing appetite for data from faster processors.

I have been predicting that Ethernet would be obsolete in 1993; now I think it will be the late 1990s. FDDI will be mainstream in 1995; that is attributable to MIPS and the things that come with MIPS.

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January 10th was also a day we broke something else — the \$1,000 per MIPS price/performance barrier. Something no one else had ever done.

The cheering you probably heard came from users whose applications always have them looking for more power at their desks. At last, a full 14 integer MIPS UNIX-based workstation was available at a price they could afford.

But the reasons for celebrating didn't stop there. While its unmatched price/performance put it in a class by

itself, the DECstation 3100 workstation fit perfectly into our integrated approach to computing. It includes the ability to share with VAX/VMS™ systems, Apple® Macintosh, MS-DOS® PCs and, of course, other UNIX systems.

No wonder January 10th was a day everyone celebrated.



3Com plants the seeds for spring brouters

BY JOANIE M. WEXLER
CW STAFF

SANTA CLARA, Calif. — The dual-purpose brouter, which provides concurrent bridging and network protocol routing, will reportedly make its way into 3Com Corp.'s internetworking product line next March.

The company is touting price/performance of the \$5,495 BR/2000 local Ethernet brouter.

Designed around the company's Netbuilder hardware platform, which is based on the Motorola, Inc. 60820 processor, the brouter will operate as a bridge; as a router supporting Transmission Control Protocol/Internet Protocol (TCP/IP), Open Systems Interconnect (OSI) and Xerox Network Services protocols; or as a brouter for routing these protocols and concurrently bridging all others.

A major impetus behind the announcement, according to Clinton Ramsay, senior marketing engineer at 3Com's Enterprise Systems Division, was that "users are getting more sophis-

ticated and want to combine both technologies in the same box."

Brouters offer network managers increased control and flexibility. For example, a network manager may want several local-area networks to function as one large network and would use a bridge to accomplish that. For large networks with complex topologies, such as backbones with several subnetworks, routing is useful for communicating over network segments. Brouters combine both functions by bridging certain protocols and routing others.

Bridges, which are protocol-independent, function at layer 2 — the data link layer — of the OSI reference model to filter out and forward local and remote data packets. Routers, on the other hand, operate at layer 3 — the network layer — and are protocol-specific.

Some protocols, such as Digital Equipment Corp.'s Local-Area Transport and IBM's Logical Unit 6.2, do not contain the necessary specifications to make them routable, so they are sup-

Firm adds C-band VSAT line

BY ELLIS BOOKER
CW STAFF

ATLANTA — Scientific-Atlanta, Inc. recently made the first shipment of its new C-band very small aperture terminal (VSAT) satellite line, which will be part of a network linking many of Indonesia's 13,000 islands.

The company hopes this and other sales will plumb the market for C-band, which remains the prevalent form of interna-

ported by bridging.

In addition to combining the features available on 3Com bridges with the ability to route multiple protocols, the 3Com brouter supports both Simple Network Management Protocol and Common Management Information Protocol over TCP/IP network management agents, "so we're able to accommodate both our own network management strategy — OMA [Open Management Architecture] — and industry-standard managers," Ramsay said. He added that 3Com plans to announce a graphical network management system in 1990.

tional satellite networking.

Unlike higher frequency Ku-band satellites used in the U.S., C-band systems operate at 3.7 to 4.2 GHz. Satellites supporting this standard include Intelsat, Pan American Satellite, Palapa, Morelos, Brazilsat, Eutelsat and Arabsat.

Scientific-Atlanta's agreement with Perumtel, Indonesia's ministry of telecommunications, calls for it to provide a VSAT network to link the archipelago's 13,000 islands from a hub in Jakarta. The network will offer batch and interactive voice, data and direct-broadcast video services to the region, including the Philippines, Republic of China and other Southeast Asian countries.

One of the first applications for the Indonesian network will be to link hotels and travel agents throughout the 13,000 islands. The initial shipment for the network hub went to Scientific-Atlanta's partner in the region, Citra Sari Makmur, a private Indonesian firm that will own and operate the VSAT network. Five VSATs were shipped along with the hub, according to Scientific-Atlanta.

In another major C-band announcement, Scientific-Atlanta said last month at the ITU-COM '89 electronic media exhibition in Geneva that it would deliver a 100-site VSAT interactive data network for Chile.

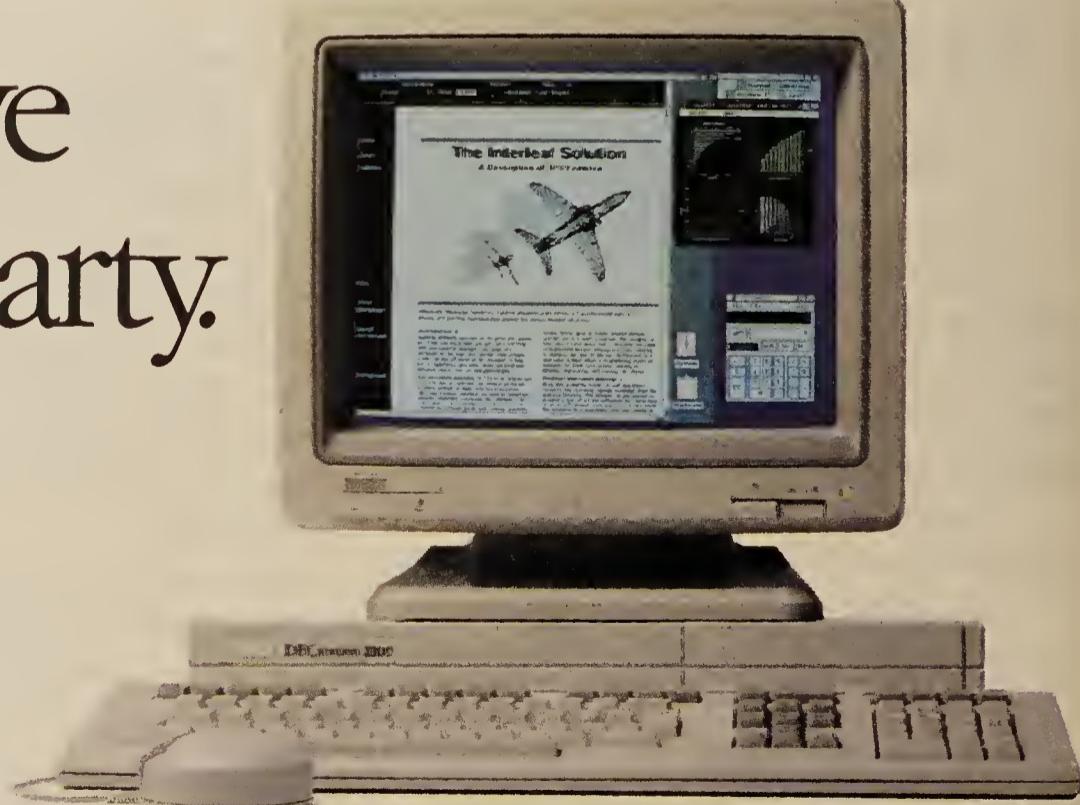
Compania de Telefonos de Chile, S.A., a privately held telephone company based in Santiago, will provide the service to Chilean industry. According to Scientific-Atlanta, the Chilean network could grow to more than 2,000 sites.

"It's safe to say that C-band will be half of our business in the near term," said Scientific-Atlanta spokesman Randall L. Blevens.

Scientific-Atlanta's Skylinx.25 C-band VSAT system uses a master earth station acting as a hub, plus small terminals.

The master station antenna sizes range from 7 to 11 meters; the remote terminal antennas range from 1.8 to 2.4 meters. Like its other VSATs, these use an X.25 networking scheme and feature a network management system, which resides in a packet switch at the master earth station.

On July 11th, we had the second party.



Nolle

FROM PAGE 53

taxed. The problem will worsen as corporations move from centralized to distributed processing. Instead of the relatively low-speed, relatively constant information flow between terminal and host, the environment will feature many short, high-speed bursts between computers. This will create a demand for very high transmission rates but will also create transient connections that require efficient handling.

Carriers have already begun to deploy the solution to the problem of increased bandwidth needs: fiber optics. Sonet, or Synchronous Optical Network, is a standard that allows various equipment to interoperate over a fiber-based carrier network, at speeds of either 51.8M bit/sec. — the capacity of a T3 trunk — or 2.4G bit/sec.

AT&T and Northern Telecom, leading providers of central office equipment in the U.S., both have strategies for Sonet integration. AT&T's is called Central Office 2000 and Northern Telecom's is Fiberworld. These strategies, along with those of other central office systems vendors, will increase

the use of fiber optics from the central office outward toward the subscriber — what AT&T likes to call the "first mile" approach — in preparation for future wideband services such as video.

Sonet provides a more efficient way to handle the type of time-slot traffic that phone systems use today, but it does not deal with the issue of inefficiency, particularly in transmitting data. Frame-relay technology addresses the problem by streamlining the method by which data packets are handled.

In most existing networks, the routing of data packets causes end-to-end delay, an average of about 180 msec in a terrestrial packet network. Frame relay places routing information in the low-level data link header and allows nodes to forward information without regard for error checking. Thus, the delay through a node can be reduced to several milliseconds.

Telenet Communications and Stratacom, champion of "Fastpacket" technology, have teamed up to create a frame-relay environment suitable for public packet communication. Such a network could cut the delay time from 180 msec to as low as 18 msec, making packet-switching a practical technology

for many types of nondata information. Even voice information can be sent via packet networks of this new type, providing that delay can be maintained relatively constant.

AT&T's Integrated Access and Control System (IACS), also based on frame-relay concepts, provides delay smoothing through time-stamping of packets. Both frame-relay and IACS will start showing up in carrier networks next year, promising more cost-effective networking for information of all types.

One remaining problem, however, is that the TDM environment used by central office switches is unsuitable for the above technologies. The alternative is "Asynchronous Trans-

mission Mode," or ATM.

ATM eliminates the concept of time-slots, substituting a packet-oriented transmission that requires each data, voice or video information element to have an identification code attached. ATM can be combined with standard TDM to reserve capacity for critical communications, while allowing other information exchanges, which are not particularly sensitive to variable delays, to queue up for the remaining capacity.

ATM can at least be reconciled with Sonet standards and further simplifies the attachment of relatively low-speed offices onto high-capacity trunks. It also supports a free combination of constant-rate, medium-

speed channels and very high-speed, intermittent communications. In all, ATM seems most likely to be the basis for the all-formats network of the future.

The term "future" is significant here. None of this is going to happen immediately, and in fact, early deployment of Sonet and frame relay may be almost imperceptible in user terms. In a financial sense, there is a considerable inertia in today's carrier hardware, and preparation for new broadband services and new levels of user demand will proceed only as fast as the pace of both can justify.

Nolle is president of CIMI Corp., a communications consulting company that is based in Haddonfield, N.J.

AT&T lowers ISDN prices, announces enhancements

BY ELISABETH HORWITT
CW STAFF

AT&T recently announced plans to lower prices and expand services for its Integrated Services Digital Network (ISDN) offering.

A reduction from three to two

cents per number will be introduced for AT&T's Information Forwarding 2 automatic number identification service, the vendor said.

AT&T also said it will introduce ISDN service features in 180 additional locations by year's end. The telecommunica-

tions vendor also plans to provide ISDN-based access to several additional AT&T network services: Software Defined Network Service, Multiquest and the Multiquest and Megacom 800 high-capacity services.

In addition, AT&T said it will eliminate installation and rearrangement charges for the Call-by-Call Service Selection feature, which allows users to change the AT&T service accessed by a given ISDN subchannel on a call-by-call basis.

digital

DECstation 2100 workstation

Almost 6 months to the day, there was another reason to celebrate.

Because that was when we announced the DECstation™ 2100 workstation, the latest member of Digital's family of UNIX-based RISC workstations, systems and servers. In fact, on July 11th, the breadth of our offerings

extended from the DECstation 2100 all the way up to the DECsystem™ 5800 multi-user system — the industry's broadest range of compatible UNIX-based computers.

In the family tradition, the DECstation 2100 workstation broke new price/performance ground, too. It gave users the most powerful entry-level UNIX-based workstation available in the industry — 10 integer MIPS for under \$8,000. The power of a RISC workstation for the price of a PC.

Besides sharing price/performance leadership, our two UNIX-based workstations shared a lot more. For example, the way they adhered to industry standards like the X Window System™, OSF/Motif, TCP/IP, NFS™, IEEE POSIX 1003.1, X/Open XPGII, among others.

The DECstation 3100 workstation on January 10th.

The DECstation 2100 workstation on July 11th.

Party. Party.



NEW PRODUCTS

Links

Harris Corp. has introduced the Anamix I, a multinode video teleconferencing system that is a personal computer-based network capable of multimedia operations, including video, voice, data and graphics.

According to the company, the unit can be configured to support as many as eight nodes. Pricing ranges from \$85,000 for a starter system to \$200,500 for an eight-node version. The product has a six-month warranty.

Harris
P.O. Box 37
Melbourne, Fla. 32902
703-739-1723

Ultra Network Technologies, Inc. has expanded its networking options for Cray Research, Inc. supercomputer users with the announcement of a network processor designed to interface with the 12.5M bit/sec. Cray low-speed channel.

The LSCNP allows user to connect a variety of computers to a Cray supercomputer via the Ultranet network on the low-speed channel, the company said. The product resides in the

Ultranet 1000 Hub and is supported by Ultranet's Unix 4.3 BSD sockets application interface under the UNICOS operating system on the Cray-2, X/MP and Y/MP computers.

Scheduled for delivery in the second quarter of 1990, LSCNP costs \$45,000.

Ultra Network
101 Daggett Drive
San Jose, Calif. 95134
408-922-0100



Metacomp's VMEconnect
can link 256 asynch devices

Metacomp, Inc. has unveiled an asynchronous device connectivity subsystem capable of connecting eight to 246 asynchronous devices to Motorola, Inc. VMEbus systems.

VMEconnect utilizes a single

slot in the VMEbus chassis, the company said, and a typical subsystem includes a single-board VME host adapter, one or more eight- or 16-channel intelligent Remote Asynch Concentrators and a single RJ45 twisted pair cable which is 1,000-plus feet in length. OEM pricing for a 16-port VMEconnect is \$2,268, and a 32-port system is \$2,865.

Metacomp
Building A
15175 Innovation Drive
San Diego, Calif. 92128
619-673-0800

Chipcom Corp. has announced a fiber module designed for use with its LAN-to-LAN Multimedia Hub and 3Com Corp.'s Multic平 Repeater.

The LAN-to-LAN Fiber Module, a two-port fiber-optic Ethernet module, is said to be compatible with the firm's Ornet fiber-optic Ethernet products and reportedly provides fault tolerance capabilities for connection to fiber backbones. The product permits network diameters to exceed 2.5 km, with as many as 2 km between any two hubs or Multic平 Repeaters. A single unit costs \$1,095.

Chipcom
195 Bear Hill Road
Waltham, Mass. 02154
617-890-6844

A wireless personal computer-to-peripheral communications product has been introduced by Hillier Technologies Limited Partnership.

Called Airlink 1, the product uses low-power spread-spectrum packet radio to send data to peripherals up to 150 feet away. It can transmit through walls and is not limited to line of sight. The product can also accommodate as many as 99 peripheral connections.

Scheduled to ship by year's end, the Airlink 1 will carry an introductory suggested retail price of \$259 per node and \$499 per link set.

Hillier Technologies
500 Alexander Park
Princeton, N.J. 08543
609-520-0144

Share Communications, Inc. has introduced a software package designed to convert any networked, IBM-compatible personal computer to a facsimile machine.

Called Faxshare, the product does not require a dedicated PC or an electronic mail system for fax delivery and notification. It allows network users to create customized faxes directly on their individual workstations. The faxes may be transmitted to any Group III fax machine or any

computer equipped with a facsimile card. It is compatible with DOS 3.0-based local-area networks that support record and file locking.

The retail price is \$2,495.
Share Communications
Suite 1403
Tower Building
Seattle, Wash. 98101
206-292-8883

Ricoh Corp. has introduced an external adapter designed to expand the communications capabilities between computers and facsimile machines.

According to the company, the DX-1 computer and facsimile peripheral permit IBM Personal System/2s, Personal Computer ATs and compatibles and Apple Computer, Inc. Macintosh systems to communicate with local and remote Group III fax machines.

In addition, the product is said to permit a local fax machine to serve as a computer printer and scanner.

The device is priced at \$799 for the hardware and \$295 for the support software for a Microsoft Corp. Windows environment.

Ricoh
5 Dedrick Place
W. Caldwell, N.J. 07006
201-882-2000

Now look at the third parties.

While all this celebrating was going on, it's clear that some people have been hard at work.

The software developers.

In an amazingly short time, they've already developed an impressive list of applications that run on all our UNIX-based RISC workstations and systems. And the list is rapidly growing. For the complete list of

applications, as well as performance data, call 1-800-842-5273, ext. 300.

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Cadence Design Systems, Inc.
Cadence Design Systems, Inc.
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Expert Views, Inc.
Gateway Design Automation Corp.
Genrad Corp.
Hibbitt, Karlsson & Soresen, Inc.
Landmark Graphics
Meta-Software, Inc.
Parametric Technology Corp.
PDA Engineering
Sierra Geophysics, Inc.
Swanson Analysis Systems, Inc.
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BLAST II
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D-AS/88K
D-LD/88K
D-AR/88K
BASIC
DBL[™]
DBL Synerge[™]
Down to Earth[™]
Allegro Common
Windows[™]
Allegro Compose[®]
IBUKI Common LISP[™]



NETWORKING

Gateways, bridges, routers

Microcom, Inc. has introduced three IBM 3270 gateways to be used with stand-alone and local-area network versions of the company's Relay Gold 4.0.

Presenting an alternative to provide IBM 3270 coaxial boards with IBM mainframe connectivity, the Synchronous Data Link Control (SDLC) gateway is a modem-to-modem nonspecific LAN gateway solution, the company said.

The Token-Ring Gateway is a hardware and software connector specific to users running IBM Token-Ring networks.

The X.25/QLLC Gateway allows connection to an X.25 network.

The SDLC version sells for \$2,795 and has been available since August.

Microcom
500 River Ridge Drive
Norwood, Mass. 02062
617-551-1000

Excelan, Inc. has enhanced Fastpath 4, its Apple Computer, Inc. Appletalk-to-Ethernet gateway, to include Simple Network Management Protocol (SNMP) support.

According to the vendor, the

product is mandated for the federal computing marketplace and offers zone-security capabilities.

The enhanced gateway supports Appletalk Phase 1 and 2, Digital Equipment Corp.'s Decnet and Transmission Control Protocol/Internet Protocol environment.

The list price for an Appletalk Phase 2 configuration is \$2,795. Current users of Fastpath 4 can upgrade to an SNMP version for \$85.

Excelan
2180 Fortune Drive
San Jose, Calif. 95131
408-434-2300

Shiva Corp. has announced an Ethernet-based product created to provide routing between Localtalk and Ethertalk networks, serial sharing over Ethertalk and Localtalk and wide-area networking between remote Ethertalk/Localtalk internetworks.

Called Ethergate, the combination hardware and software product also facilitates dial-in network access from a remote Apple Computer, Inc. Macintosh, IBM Personal Computer or compatible, the company said. Ethergate incorporates a modular design and uses battery-backed-up random-access memory. The product carries a list

price of \$2,399.
Shiva
155 Second St.
Cambridge, Mass. 02141
800-458-3550

Emerging Technologies, Inc. has announced a T1 interface for the company's Ethernet bridge and router product, ET/Bridge.

The T1 product incorporates a V.35 interface and supports line speeds up to 1.54M bit/sec., the vendor said, and each bridge unit can accommodate as many as four T1 interface devices. A single-line T1 bridge includes one Ethernet interface, one T1 interface and one asynchronous interface. It is priced at \$3,695.

Emerging Technologies
P.O. Box 1525
Mineola, N.Y. 11501
516-742-2375

Micro-to-host

Cfsoftware, Inc. has announced a personal computer-to-mainframe program interface for users of IBM Personal Computers and compatible systems.

Called Across-the-Boards, the product reportedly permits access to individual records and provides access to coaxial boards, local-area network gateways, bisynchronous and synchronous data link control com-

munications and most protocol converters. It interfaces with programs written in Cobol, C, Basic, Pascal and assembler and is priced from \$2,500.

Cfsoftware
Suite 201
2454 E. Dempster
Des Plaines, Ill. 60016
312-824-7180

Adrem, Inc. has enhanced its online data entry system for microcomputers and mainframe machines.

Adders Version 4.1.1 provides direct interactive personal computer-to-mainframe communication and offers full data validation on batches of data transferred from the PC to the mainframe, the firm said. The latest release supports IBM's SQL/DS on the mainframe and runs on Novell, Inc.'s local-area network products. Pricing is from \$14,000 to \$30,000, depending on configuration.

Adrem
1 Hollis St.
Wellesley, Mass. 02181
617-235-2223

Adacom Corp. has introduced an intelligent IBM 3270 port expander designed to accommodate the addition of type "A" terminals, personal computers and printers to an existing IBM

3174 and 3274 controller without utilizing another controller port.

Adastar allows each controller port to communicate with as many as five simultaneous users for a maximum of 160 devices per unit. The product does not degrade response time, and micro-to-mainframe file transfer is supported. The maximum coaxial cable distance from the controller to the terminal can be extended to 10,000 feet.

Adastar costs \$1,005, and the company offers a 15-day free trial period.

Adacom
Suite 3001
200 Friberg Pkwy.
Westboro, Mass. 01581
508-898-9600

Aspen Research, Inc. has enhanced its Mozart micro-to-mainframe applications development software.

According to the company, the enhancements allow developers using personal computers to build IBM CUA/SAA-compliant PC-style interfaces for mainframe applications within days, rather than months. The product offers support for IBM Application System/400 platforms and Hewlett-Packard Co., Digital Equipment Corp. and Prime Computer, Inc. machines.

digital

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NAG (Numerical Algorithms Group)
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Asynchronous terminal support has also been added.

Mozart Opus 1.1 is now shipping, and free upgrades are available to registered users of Version 1.0.

Aspen Research
Suite 630
1350 Bayshore Highway
Burlingame, Calif. 94101
415-340-1588

Local-area networking software

Micro Decisionware, Inc. has announced that its end-user access program, PC/SQL-link, has recently been upgraded to allow DOS-based personal computer users to access IBM's OS/2 Extended

Edition Version 1.2 Database Manager over standard Netbios-compatible local-area networks.

Scheduled for release early in 1990, pricing for Version 3.3 will range from \$300 to \$500 per user depending on quantity.

Micro Decisionware
Suite 205
75 Manhattan Drive
Boulder, Colo. 80303
303-443-2706

Indigo Software Ltd. has announced an electronic forms software package that allows multiple users and applications to use electronic forms on networks or minicomputers.

Called Jetform-Server, the program

utilizes a client/server software architecture and will process simple data streams produced by client applications.

Versions for personal computer local-area networks, OS/2 LAN Manager and Hewlett-Packard Co.'s HP 3000 are scheduled for release in January. Pricing ranges from \$995 to \$5,500.

Indigo Software
Suite 400
560 Rochester St.
Ottawa, Ont., Canada K1S 5K2
613-594-3026

Advanced Software Technologies, Inc. has released Version 4.0 of Magix, the company's multiuser database software for local-area networks.

According to the vendor, the software

now offers support for as many as 250 workstations. The product combines its own operating system, communications, database and compiler software into one package and can function without PC-DOS or a network operating system.

Magix 4.0 is available in both development and runtime versions, and pricing for runtime modules ranges from \$1,250 to \$13,400, depending on the number of workstations supported.

Advanced Software
Suite 297
2041 Rosecrans Ave.
El Segundo, Calif. 90245
213-322-4440

Local-area networking hardware

Samsung Information Systems has announced two local-area network hardware systems, each designed to operate with Novell, Inc.'s 386 networking software.

The 33-MHz 386A3 file server allows the user to boot Novell's Netware directly from the disk coprocessor board and carries a suggested list price of \$6,495, the firm said.

The PCterminal/386SX diskless LAN workstation incorporates four expansion slots and will run DOS with Microsoft Corp.'s Windows and other Intel Corp. 80386-specific software applications.

The workstation lists at \$2,195. Both products are scheduled for shipment in the first quarter of 1990.

Samsung
3655 N. First St.
San Jose, Calif. 95124
408-434-5400

An adapter designed to attach IBM's 6262 line printer products to personal computers has been announced by Barr Systems, Inc.

The Barr/DPI adapter implements the Dataproducts Corp. printer interface in IBM Personal Computers, XT, ATs and compatibles, as well as IBM Personal System/2 Models 25 and 30. Compatible with both DOS and BIOS, the product appears to the PC as a parallel printer adapter.

Barr/DPI is priced at \$400.
Barr Systems
4131 N.W. 28th Lane
Gainesville, Fla. 32606
904-371-3050

OS/2 networking

A print server program that allows users to attach multiple shared printers to any MS-DOS workstation running on an OS/2 network has been announced by Lan Systems, Inc.

According to the vendor, Lanspool for OS/2 Networks works with the network operating system print queues so that memory is not used at the local workstation.

The program utilizes 2K bytes of random-access memory overhead per shared printer when operating in background mode and uses no memory at the printing personal computer.

Lanspool for OS/2 Networks requires an IBM Personal System/2 or 100%-compatible system and is priced at \$395 per single server with an unlimited user license.

Lan Systems
300 Park Ave. S.
New York, N.Y. 10010
212-995-7700

Getting today's diverse computer systems to communicate with each other is one of the toughest operational tasks you may face.

While others have been talking about the problem, Mitek Systems has developed a range of **OpenConnect™** solutions for system connectivity. The Mitek OpenConnect approach means your IBM® host can talk back and forth to your VAX, AT&T 3B, HP, IBM PC, Apollo, Sun, Tektronix workstations, and just about any other system, including those you may need in the future.

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(214) 490-4090

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2033 Chennault Drive • Carrollton, Texas 75006
(214) 490-4090 • FAX: (214) 490-5052

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PostScript® laser printers
used to be expensive, large and
shared by an entire office.



Until now.



microLaserTM from Texas Instruments: the affordable PostScript printer users can call their own.

Finally, for less than \$3,000* users can have a PostScript laser printer right at their desks. TI introduces its new microLaser, with the features users want — now and in the future.

Small size. Lots of value.

At only 13.4 inches wide and 14.2 inches deep, microLaser may be the small kid on the block, but it packs plenty of punch. This printer takes full advantage of powerful PC software. That's because it uses the Adobe® PostScript printer language and is compatible with the HP LaserJet® Series II — allowing the user to switch between them easily. With that kind

Because microLaser features the PostScript language, it prints fonts in a variety of type styles and sizes. Plus, it can print them tall-ways, long-ways, all kinds of ways. It even prints complex pages of integrated text and graphics.

Capabilities that grow as their needs grow.

One of the best things about microLaser is that users only buy what they need. So if they're not ready for PostScript language, they can buy the standard microLaser for less than \$2,000** and add PostScript software and other powerful features later.

Users can upgrade microLaser without tools or technicians by simply adding upgrade boards. These boards include up to four 1 Mb increments of memory, serial and AppleTalk® interfaces and a PostScript interpreter. All they have to do to get additional fonts or emulations is plug optional microCartridges into two credit card-size slots.

Superior paper handling.

Part of what makes microLaser a truly personal, desktop laser printer that takes up so little room is its paper drawer, which slides *inside*. Because microLaser holds 250 sheets standard (it holds 500 with an optional paper drawer), users spend less time refilling paper and more time creating superb-looking documents.

The printer also handles a variety of



of flexibility, the six-page-per-minute microLaser is ideal for word processing, spreadsheet and desktop publishing applications.

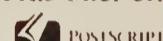


FREE! Adobe typefaces from TI.

What could be more affordable than that? When users purchase a TI microLaser with a PostScript interpreter, they get their choice of an Adobe Publishing Pack for their PC or Macintosh® (up to a \$475 retail value). Selected by publishing experts, each Pack features three high-quality Adobe typefaces proven to work well together in a specific application, such as newsletters, forms and schedules or presentations.

Not only that, they get an expert-written "How To" booklet so they can get started quickly and easily.

Call TI at 1-800-527-3500 for details!
This offer ends March 31, 1990.



paper sizes and types — from letter, legal and executive to transparencies, labels and envelopes. For those times when users face a large mail merge task, they can just plug in an optional envelope feeder to easily alternate between letters and envelopes.

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**TI suggested list price is \$1,999.


**TEXAS
INSTRUMENTS**

Front ends, multiplexers

Racal-Milgo has introduced its Omnimux ICSU family of T1 intelligent channel service units.

The product line comprises four units — each designed to promote network uptime and reliability by giving operators both local and remote administrative and management control. This includes alarming, configuration control and full diagnostic management capabilities. Pricing starts at \$3,488.

Racal-Milgo
1601 N. Harrison Pkwy.
Sunrise, Fla. 33323
305-475-1601

Network management

An Ethernet traffic monitor has been introduced by Network Application Technology, Inc.

The Ethermeter Model Lanb/150 monitors all traffic in an Ethernet segment and reports statistics to monitoring stations through the network itself, according to the firm. Ethermeters can be placed throughout an internetwork and accessed through a central network management station.

The product is available in two configurations: an IBM Personal Computer AT-compatible card, installable in any full-length slot and priced at \$1,295, and a self-contained enclosure with power sup-

ply, priced at \$1,495.

Network Application Technology
21040 Homestead Road
Cupertino, Calif. 95014
408-733-4530

Spider Systems, Inc. has announced an Ethernet local-area network remote monitoring software package, designed for use with the company's Spidermonitor 220 and Spideranalyzer 320 products.

The software runs directly over the network without a serial line or terminal server connection, and the master station can access a slave located in another building, state or country while maintaining network speed, the vendor said. Spiderremote software sells for \$950, and each remote segment is priced at \$295. It

is scheduled for delivery in January.

Spider Systems
12 New England Executive Park
Burlington, Mass. 01803
617-270-3510

Racal-Interlan has announced a network management product created specifically for use in extended local-area network environments.

Lancentral allows network managers to perform a variety of network tasks, including network management, topology mapping, configuration control and device management. All performance analysis and fault isolation operations are centralized, the vendor said, and each can be initiated from a dedicated Intel Corp. 80386-based IBM Personal Computer AT. The hardware platform also includes the company's NIS210-16 controller.

Priced at \$1,495 and scheduled for mid-December delivery, Lancentral is compatible with Ethernet IEEE 802.1 and Thin Ethernet/IEEE 802.3 networks.

Racal-Interlan
155 Swanson Road
Boxboro, Mass. 01719
508-263-9929

Why Experienced Computer Users Don't Think Very Much About Modems

Our research shows that knowledgeable MIS managers, PC coordinators, and end users simply don't want to think of modems at all.

Not exactly what modem makers relish hearing! But it's hardly surprising that you want to save your thinking for bigger and more important things.

Modems are a lot like plumbing. As long as the data is flowing, they're practically invisible. However, when something goes wrong, those little boxes are just lavished with attention.

By then, you've lost data, time, money, and perhaps an opportunity. Both senders and receivers are dismayed and disarrayed.

Fortunately, there are simple ways to limit this aggravation. Our research suggests a few points to keep in mind.

The cost of the modem is not the modem's cost.

The fixed price of the modem is relatively insignificant. Ongoing costs matter far more.

In the long run, for example, a high-speed modem can save you a small fortune on phone bills. More data sent in less time means less money to the phone company.

You can also save with more reliable and robust modems that communicate over a wide range of telephone line conditions.

Resending data costs both time and money. The less time you spend transmitting data, the more time you have to spend on your business.

Downtime and adaptation time can also cost you dearly.

Be sure to ask if the modems are compatible with their earlier generations. You don't want to start with suppliers who regularly obsolete their own products, or who don't offer you an upgrade path.

Modem support can be a real hassle with the wrong vendor.

Setting up and installing your modem can affect both your budget and your sanity. Many manufacturers forget to make their modems easy to use!

This becomes expensive when you want to start up fast or need to support a large number of users.

Dip switches, on-line help screens, and easy-to-use manuals should be demanded. It also helps to have a quick-reference guide printed on the bottom of the case.

In sticky situations, it's vital to have toll-free support and applications engineering.

Bottom line:
The data must get through.

A bit of data traveling from your computer is converted by your modem and sent to your local telephone office.

From there, it is exposed to the vagaries of phone lines, various transmission media, and weather patterns.

They all conspire to corrupt your data and slow down your throughput.

All modems are not created equal; some are less sensitive to noise and have better error-correcting protocols.

Some are simply more robust and have better filters.

Modems are more than mere commodities — technology does count.

"When things go wrong, I want the supplier there."

That's when you need the right supplier on board. Look for one who gives fast turnaround time on repairs and adjustments, and who doesn't vanish after the sale.

Look for a company with history and promise — one that's here today and here tomorrow.

Not everyone needs the same modem.

The best way to keep modems from wasting your time and money is to buy them from a reliable supplier with a broad product line. Those with limited lines sometimes try to cram square pegs into round holes.

People with differing applications have differing requirements. Dealing with a broad-line supplier simplifies ordering, reduces training/support time and cost, and limits hassle and coordination.

In the end, if you give enough consideration to choosing the right supplier, you'll hardly have to give modems any thought at all.

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Lancentral allows network managers to perform a variety of network tasks, including network management, topology mapping, configuration control and device management. All performance analysis and fault isolation operations are centralized, the vendor said, and each can be initiated from a dedicated Intel Corp. 80386-based IBM Personal Computer AT. The hardware platform also includes the company's NIS210-16 controller.

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Racal-Interlan
155 Swanson Road
Boxboro, Mass. 01719
508-263-9929

Electronic mail

An electronic mail server developed for use with Novell, Inc. Netware local-area networks has been announced by Cubix Corp.

Designated the QL 1001, the server board consists of an IBM Personal Computer XT-compatible processor with 768K bytes of random-access memory and COM ports. The unit plugs directly into the bus of the file server and reportedly acts as the dedicated server for Novell's Message Handling Service and several other mail packages. The server retails for \$645.

Cubix
2800 Lockheed Way
Carson City, Nev. 89450
702-883-7611

The Tops Division of Sun Microsystems, Inc. has unveiled two electronic mail products aimed at work-group, enterprise-wide and global networks.

Inbox 3.0 allows both IBM Personal Computers and Apple Computer, Inc. Macintoshes to act as servers to store one another's mail; and Inbox Plus was designed to provide an upgrade path to enterprise-wide or global E-mail systems.

Both products are scheduled for delivery in January. The products are priced at \$329 and \$995, respectively.

Sun Microsystems
Tops Division
950 Marina Village Pkwy.
Alameda, Calif. 94501
415-769-9669

Alisa Systems, Inc. has expanded its Mailmate electronic mail integration product line to include Microsoft Mail.

Mailmate/MM is an Apple Computer, Inc.-based bridge for Microsoft Mail that provides a two-way exchange of E-mail with Vmsmail, Digital Equipment Corp.'s Decnet-based mail product. Mailmate includes Alisa's TSSnet Decnet drivers and network control program. It costs \$950 to \$9,750, depending on number of users.

Alisa Systems
221 E. Walnut St.
Pasadena, Calif. 91101
818-792-9474

MANAGER'S JOURNAL

EXECUTIVE TRACK



Jeffrey J. Robinson has been named director of information resources at Tredegar Industries, Inc. in Richmond, Va.

Robinson has 20 years of experience in information systems management, including planning, development and operations. He was most recently assistant director of the information resources department at Ethyl Corp. in Richmond, which spun off its plastics, aluminum and energy businesses earlier this year to form Tredegar.

Robinson holds a bachelor's degree in accounting and an MBA, both from Louisiana State University. He is a certified public accountant and a certified system professional.

.....
Joseph S. DeBlasi has been named executive director of the Association for Computing Machinery, a New York-based educational and scientific society representing 75,000 professionals.

DeBlasi recently retired from IBM, where he was corporate director of standards. His 25-year IBM career included positions in standards, marketing, financial planning and government IS.

He is chairman of the U.S. Committee for the International Standards Organization's Joint Technical Committee for Information Technology.

DeBlasi holds a bachelor's degree in mathematics from Virginia Polytechnic Institute. Before joining IBM, he served as a captain in the U.S. Air Force. He and his family live in New Canaan, Conn.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Constitution Road, Framingham, Mass. 01701-9171.

Helene Curtis' IS makes waves

IS director Gildea wins kudos for systems makeover at hair-care firm

BY MARYFRAN JOHNSON
CW STAFF

When Tom Gildea applied for the director's job in business information systems at Helene Curtis Industries, a corporate headhunter warned him, "No one stays there more than a year."

But rumors about the hostile climate for IS at the family-owned hair-care products company only served to intrigue Gildea, an intense, energetic man who relishes a challenge. Three years after he accepted the top IS job, the 45-year-old Gildea boasts of having "the best job in the city of Chicago."

With strong backing from Ronald Gidwitz, chief executive officer and son of Helene Curtis' founder, Gildea spearheaded a computer systems and software makeover designed to keep pace with a \$725 million company growing at 30% per year.

His IS department now plays a crucial role in business planning throughout the company — from coordinating a new fully automated warehouse to arming sales representatives with laptop computers loaded with information from the corporate database.

Although the brutally competitive consumer products field is dominated by giants Procter & Gamble, Inc. and Johnson & Johnson, Helene Curtis manages to have three of its shampoos — Suave, Finesse and Salon Selectives — among the Top 10 best sellers. In the early 1980s, the company began moving out of its niche as a staid salon supplier with aggressive marketing of existing and new products.



Helene Curtis' Gildea, left, eases Wagner's job as distribution director

Yet all of this began without much thought to technology.

"This company was well into the 1980s with an old batch-oriented system driven by an IBM mainframe," Gildea recalls. "There was no appreciation, early on, for the potential of IS as a competitive tool."

Worst of all was the limited automation in Helene Curtis' main warehouse, which had no integrated system to manage inventory, orders or distribution.

"We literally didn't know where anything was," says Howard Wagner, director of traffic and distribution and a nine-year company veteran. "We would send people into the warehouse to search for a caseload of Finesse."

Today, a gleaming new \$32 million

distribution center in northwest Chicago bears testimony to the company's determination to make customer service its trademark (see story page 76).

Gildea began in 1986 with a disconnected series of technology "islands" throughout the 2,500-employee company. There were a few dozen personal computers and a central data center with one IBM 3083 and three VAX midrange machines from Digital Equipment Corp.

One of Gildea's first major tasks was to derail company plans to purchase an IMS-based order-entry mainframe package. He convinced the executive committee that the system was a "potential recipe for disaster" because its database was not relational and it

Continued on page 76

Del Monte's independent IS unit a plum

BY CHARLES VON SIMSON
CW STAFF

Can information systems autonomy be the ticket to corporate freedom? At Del Monte Foods USA in San Francisco, it certainly hasn't hurt.

By the end of this month, executives at Del Monte expect the RJR Nabisco, Inc. subsidiary to be independent after a leveraged buyout (LBO) by Del Monte senior management and a group of other investors. And they believe that the creation of an independent IS utility within the past year has greatly simplified the process.

"Having a large part of the data center intact allows senior management to concentrate on managing the change taking place in the company, not the infrastructure," said David A. MacPherson, Del Monte's vice-president of MIS.

A year ago, Kohlberg, Kravis, Roberts & Co. executives were touring RJR subsidiaries, looking for pieces to cut to trim debt incurred from the record \$25 billion LBO of the company. From the beginning, Del Monte Foods appeared ripe for a sell-off.

At the time, the company shared all computing resources with other RJR-owned companies through a number of common data centers and a tightly intertwined telecommunications network. Last December, however, RJR decreed that Del Monte would form its own stand-alone IS capability.

While there was no link made to a possible sale, the unit was clearly being prepared to be independent from corporate MIS. "The [IS] restructuring began before the LBO was even



thought of," said MacPherson.

Leasing an IBM 3083 mainframe and securing about \$1 million worth of software licenses took some time but was relatively easy. The challenge came in untangling the communications network that had allowed Del Monte to share processing capacity with other RJR companies at data centers in Wilkes Barre, Pa., and Winston-Salem, N.C.

The job of canceling and adding T1 and other data links to allow communications between Del Monte plants while severing ties with other RJR companies proved far tougher than MacPherson had anticipated. But once the ties are cut, Del Monte's IS staff will have the luxury of plotting its own course. "Looking laterally at other peoples' business has finally ceased at Del Monte," MacPherson said.





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COMPUTER ASSOCIATES
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Don't automate for its own sake, say experts

BY ELISABETH HORWITT
CW STAFF

CAMBRIDGE, Mass. — U.S. manufacturers need to focus on better management practices, not automation systems, to become competitive, according to systems directors at two U.S. corporations that have long been renowned for innovation.

At a recent conference entitled "Competitive manufacturing for the next decade," representatives from Motorola, Inc. and 3M Co. explained how their firms have attempted to anchor factory automation and integration to corporate stra-

tegic goals — and particularly to each firm's bottom line.

"Computers are not the only answer," said Margaret Eastwood, corporate director of manufacturing systems at Motorola. "Systems may not bring a benefit but just compensate for sloppy management practices."

Motorola has defined for itself and set out to reach such goals as faster problem resolution, higher quality and less work in progress, according to Eastwood.

It is implementing those goals through hardware and software systems, but even

more so through management systems that embody such things as organizational structure and managerial practices, Eastwood said.



One of Motorola's factories, for example, "seems flawless, with things going out on time," little or no inventory, low overhead. However, this was all done by management systems, not automation, Eastwood said.

Good management has enabled the factory to keep both automation and workstations to a minimum, she added.

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C 1

Nor is Motorola looking to standardize on a computer-integrated manufacturing platform — a major theme at the conference.

"We have one of everything" at various sites, although different sites have their preferences as to computer supplier, Eastwood said.

A cataclysmic word

3M is another company that eschews both factory automation and integration for their own sakes, according to Cecil E. Jacobs, the company's director of material and information systems.

3M "does as little integration as possible; it is a cataclysmic word for engineers and operators trying to get the product out," Jacobs said.

When 3M found the cost of goods rising steadily from the early to mid-1980s, the company was able to reverse the trend "via operations — it had little to do with automation," Jacobs emphasized.

"IS is not strategic but tactical; strategic is what touches the customer" at 3M,

C COMPUTERS ARE not the only answer. Systems may not bring a benefit but just compensate for sloppy management practices."

MARGARET EASTWOOD
MOTOROLA

Jacobs said. Major long-term IS goals reflect corporate strategic goals of "satisfying the customer and reducing cycle and unit cost on everything," he added. IS goals include the following:

- Reduce capitalization required by 50% for data and information systems needed. "It costs too much," Jacobs said.

- Reduce systems implementation cycle by 50%. "It takes too long," Jacobs said. "Obviously a five-year implementation cycle for a product with a two-year life cycle is no good."

- Reduce support expense by 50%. "It costs too much to run IS," including support and maintenance, according to Jacobs. One road to this goal is to have the people who operate the systems run the systems, transferring maintenance and support "to people who are already there," he added.

Holding costs down

As part of its cost-cutting stance, 3M management has dictated that money will not be allocated for a new manufacturing system that costs more than 1% of the annual revenue from the business or project that requests it.

Both Eastwood and Jacobs expressed interest in the recent influx of "enablers," or software tools designed to cut down on the time, code and expertise needed to develop new manufacturing applications. The reason that Motorola wants the tools is to "inspire a software vendor to do a terrific application; we prefer to buy a package, not do it internally," Eastwood said.

In contrast, 3M is on the lookout for enablers, fourth-generation languages and other tools to help its staff write their own applications, according to Jacobs: "We don't want solutions or integration, we want tools."

**TAKING
CHARGE**
Clinton Wilder

Changin' times need IS leaders



"May you have a strong foundation when the winds of change do shift."

— Bob Dylan
"Forever young"

When people ask me what I do, I tell them that I write and edit stories about management and use of information technology. In order to do that job well, what I really have to be is a professional listener.

My job is to listen — to IS executives, consultants, academics and end users. In the 10 months since I became management editor, there has been a subtle but fundamental change in what I'm hearing about the optimum role of IS in the corporation of the 1990s.

Boiled down to its simplest form, the chorus of opinion has shifted from, "The IS executive must become part of the business" to "The IS executive must be a force for changing the business."

A recent Manager's Journal was very telling on this score. The section contained three main stories: an interview with MIT Sloan School of Management Dean Lester Thurow, a speech by IS consultant Michael Treacy at John Hancock's technology awareness day, and a piece on the General Accounting Office's rather jaundiced view of some federal IS projects. Although the three stories were very different, they all sounded the same chord that I'm hearing all over the executive offices and conference hotels: that simply computerizing most existing business processes is a long-range prescription for disaster.

Instead, the IS executive must heed the words of the late Robert F. Kennedy in the early 1960s. "Some men look at the things that are and ask why," Kennedy said. "Others look at the things that never were and ask why not?"

The technology is here today to enable a lot of things that never were in business, and the IS executive must play a leading role in getting their companies to look at them. Of course it isn't easy. The old chorus about understanding and becoming part of the business is truer than ever; it is an absolute requirement for achieving the stature necessary to be a force for change. The surest way for IS to lose credibility with senior management is to try and sell systems based on the merits of the latest whiz-bang technology — especially if it's expensive, which it usually is.

IS absolutely *must* be able to think about and communicate the benefits of information systems in business terms. That requires a thorough understanding of the company, its competition and its customers. If the IS executive can't demonstrate that understanding, he or she deserves the back-office, glass-house status that everyone decries.

Understanding the business is the prerequisite for credibility, the meal ticket for eggs and coffee at mahogany-paneled executive planning breakfasts. But it is *not enough* anymore — not in a world where some 85% of senior executives, according to a *Computerworld* survey earlier this year, believe that information systems are the key to their companies' competitiveness in the next decade.

What is needed is leadership. IS executives must step up to the table and suggest, tactfully but forcefully, the kinds of changes that their companies must make to prosper, or even to survive. That's a tough order, you may be saying. IS managers historically are viewed by the corporate powers-that-be as outsiders.

Terrific! Then who's better qualified to bring a fresh perspective to the business? Decades of staid, insular corporate leadership have stifled innovation,

stamp out flexibility and slowed market response time in hundreds of U.S. corporations. Being an "outsider" should be a blessing, not a curse — particularly an outsider armed with knowledge about the potential of information technology.

But I don't mean how many potential MIPS can dance on the head of a pin — I mean the potential of technology as an enabler of business change.

Much of that technology is here *now*. Electronic data interchange, LAN-based applications, laptop computers, high-speed data networks — moving the data is the easy part. Deciding what data, to whom, where and when is the challenge. As Thurow points out, the key to using information competitively means usually being able to *reduce* the amount of data,

weeding out the irrelevant and the redundant.

If you have a strong track record, can communicate in business rather than technical terms and understand your companies' markets and customers, it's time to speak up. Be politic, and most important, find an executive sponsor who agrees with the kinds of changes you'd like to make.

If your firm's management still won't listen, update that resume. Corporate America is going to need your leadership for necessary changes in the 1990s. Find a company whose senior management team already understands that.

Wilder is *Computerworld*'s senior editor, management.

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Curtis

FROM PAGE 71

had no functionality for the warehouse. "I still had the halo of the new kid on the block," he says, grinning. His division got the green light to revamp the data center and warehouse distribution systems.

The IS division wrapped up the first part of the makeover last summer with the new warehousing systems. The finishing touches came today, as the company went on line with its new order entry system in DB2.

"I view my role as two things: creating a vision and refreshing it as needed, and getting the resources for the people doing the work," says Gildea, former director of applications at G. D. Searle & Co., a pharmaceuticals firm in Skokie, Ill.

Today, the heart of the company "data hub" is an IBM mainframe, a Teradata Corp. Data Base Computer and a DEC Vax-cluster, interconnected through an Ethernet backbone and an IBM Systems Network Architecture network. Gildea toys with the notion of calling the company network "Hairnet."

But the real lifeline is the relational technology that links a variety of customized applications, enabling all company divisions to use the main database and share key information about manufacturing, distribution and sales.

Secret entry

Intelligence work during the Vietnam War drew Gildea onto the IS career path some 20 years ago, when a top-secret data processing project called for someone with his security clearance level. His bachelor's degrees in biology and philosophy apparently gave his commanding officers no pause. He spent 18 months in Southeast Asia and another 18 months at Strategic Air Command in Omaha, Neb.

Gildea later fleshed out his credentials with two master's degrees in management, analysis work in children's rehabilitation services and management of a Fortran-based expert system for the University of Nebraska's computer network.

The changes set in motion by Gildea have had "a very positive impact," says Charles Cooper, chief operating officer and Gildea's boss. "Our business information systems department is very customer-oriented, and very understanding of the demands of the users, which keep increasing," Cooper said.

Although computer technology has been available to consumer-products companies and their customers for years, Cooper notes, the willingness of people to use the technology is "just exploding now."

The most recent innovation is the Sales Information System, launched last month. Eventually,

up to 300 sales representatives will plug in their laptop computers at night and download the most current sales and scheduling information off the corporate database. They will also have access to the company's electronic mail and to competitive intelligence from other field reps.

"It's going to knock their socks off," Gildea says, his face lighting up with pride.

Smells, looks, works like paradise

In any other location, the tropical aroma of coconuts and berries in the air might lull the senses with dreams of paradise.

Not so here in northwest Chicago, in the massive new \$32 million warehouse that serves as Helene Curtis Industries' distribution center.

Paradise in this 376,000-square-foot behemoth means an inventory count approaching 100% accuracy. It means daily shipments of 150,000 caseloads of shampoo, conditioner and lotions — all arriving at the moment customers expect them and in the amounts they ordered.

"This is such a luxury for me," says Howard Wagner, director of traffic and distribution for Helene Curtis, as he conducts a brisk tour of the 4-month-old distribution center. "We were able to start with a clean slate and decide what our goals were."

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Two years of planning for the distribution center encompassed facilities, computer systems and employee issues.

"The technology in this building is not unique, or even cutting edge," Wagner says. "But in designing the system and the building at the same time, we were able to use the best proven technology to get the job done."

The center was designed with

a priority on customer service rather than on minimizing shipping costs. A fully integrated manufacturing, ordering and inventory system is now managed by a fault-tolerant Stratus XA2000 computer, connected via Ethernet and IBM Systems Network Architecture to the data hub in corporate headquarters downtown. The Stratus system also controls the on-board

computer terminals in each forklift, assigning optimal delivery and pickup routes to each driver.

"A work force that 10 years ago was oriented toward physical labor is today oriented toward information," Wagner points out. "The actual movement of material is hardly given any thought anymore. It's how and when and why it's being moved that matters."

In one cavernous room, floor-to-ceiling "push-back" racks — the largest such installation in the country — provide dense storage of four pallets deep per section. Each pallet holds 150 bread-box-sized cases.

The neighboring section of the warehouse looks like an indoor Coney Island. Thirty metal "spans," resembling long sliding boards, are suspended from the

ceiling. As boxes ride down the spans, a bar-code laser scanner sorts them.

All this gadgetry allows Helene Curtis to cater to its customers at greater speed and efficiency, Wagner says. "We are to the point now where every customer has special requirements. Good, average service doesn't make anybody happy anymore."

— MARYFRAN JOHNSON

MANAGEMENT BRIEFS Martini wins UCLA prize

Bergen Brunswig Corp. Chairman and Chief Executive Officer Emil P. Martini Jr. recently received the third annual Information Systems Executive Leadership Award from University of California at Los Angeles' John E. Anderson Graduate School of Management.

The school noted that Bergen Brunswig, an Orange, Calif.-based pharmaceutical distributor, is one of the few firms in which the top IS executive reports to the CEO. It cited Martini's leadership in introducing computerized inventory control and handheld portable data entry. Past winners of the award were Wickes Corp. CEO Sanford C. Sigoloff and Security Pacific Corp. Vice-Chairman John P. Singleton.

Papers are being sought for the "Partnership in Information Technology — Roles of Academia and Business in the Nineties," International Business School Computer Users Group (IBSCUG) conference in Omaha, Neb.

The conference, to be held July 22-25, will be hosted by the University of Nebraska at Omaha's College of Business Administration. Topics from any functional areas relating to the use of current and emerging computer technologies in the classroom are welcome. Topics can include trends in computer and telecommunications technologies and their impact on businesses, teaching and research experience with the use of hardware and software in business schools, expectations of future employers regarding computer competence of current and future business school graduates and the effect of emerging telecommunications technologies on business and education.

Accepted papers will be published in the conference proceedings. Deadline for submission of papers or proposals is Jan. 15, 1990. Acceptance notifications will be posted by March 1.

For more information, contact Sufi M. Nazem, College of Business Administration, University of Nebraska at Omaha, Omaha, Neb. 68182.

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CALENDAR

"The Decade of the User" will be the theme of the 1990 Uniforum conference to be held Jan. 23-25 in Washington, D.C.

Keynote speakers will be Lt. Gen. James Cassity Jr. of the Air Force, director for C3 systems of The Joint Staff of the armed forces; John A. Young, president and chief executive of Hewlett-Packard Co.; and Geoff Morris, president and CEO of X/Open.

Uniforum is the international association of Unix system users and is a nonprofit, vendor-independent trade association.

For more information, contact Uniforum at Suite 201, 2901 Tasman Drive, Santa Clara, Calif., 95054 or call (408) 986-8840.

DEC. 10-16

BGS User Group Meeting. Reno, Nev., Dec. 11 — Contact: BGS Systems, 128 Technology Center, Waltham, Mass. 02254.

Computer Associates Performance Management

and Accounting User Group Meeting. Reno, Nev., Dec. 11 — Contact: Lauren Lustig, Computer Associates, 711 Stewart Ave., Garden City, N.Y. 11530.

Planning and Selecting an Automated Patient Care System. Chicago, Dec. 11-12 — Contact: John Schreier, Rehabilitation Institute of Chicago, 345 E. Superior St., Chicago, Ill. 60611.

User Support Services: ICI Special Interest Meeting. New York, Dec. 13 — Contact: ICI, 3230 Commander Drive, Carrollton, Texas 75006.

Achieving Lights-Out Data Centers Conference. Los Angeles, Dec. 13-14 — Nelson Moskowitz, IIE Manu-

or, Chicago, Ill. 60611.

Furthering Use of Unix in Government. Washington, D.C., Dec. 11-13 — Contact: Federal Open Systems Conference, 4610 Tournay Road, Bethesda, Md. 20816.

Data Administration Management Association. Rosslyn, Va., Dec. 12 — Contact: DAMA, National Capitol Region, P.O. Box 9625, Arlington, Va. 22209.

AEC Expo Show & Conference for Architects & Engineers. New York, Dec. 12-14 — Contact: Expocons International, 3 Independence Way, Princeton, N.J. 08540.

User Support Services: ICI Special Interest Meeting. New York, Dec. 13 — Contact: ICI, 3230 Commander Drive, Carrollton, Texas 75006.

Achieving Lights-Out Data Centers Conference. Los Angeles, Dec. 13-14 — Nelson Moskowitz, IIE Manu-

faturing Institute, 23rd Floor, 437 Madison Ave., New York, N.Y. 10022.

The Baltimore Computer Conference & Exposition. Baltimore, Md., Dec. 13-14 — Contact: Linda Carter, National Trade Productions, 313 S. Patrick St., Alexandria, Va. 22314.

Vendor-Independent Data Networks. New York, Dec. 13-14 — Contact: Denise Sharp, Seminar Division Manager, The Yankee Group, 200 Portland St., Boston, Mass. 02114.

IBM Users Group Seminar & Exhibition. Hershey, Pa., Dec. 14 — Contact: Central Pennsylvania IBM Users Group, P.O. Box 361, York, Pa. 17405.

Pilgrim DPMA dinner meeting. Brockton, Mass., Dec. 14 — Contact: Bob Wychulis, 58 Leah Drive, Brockton, Mass. 02401.

Broadband: Services, Technology and the Future. Lake Buena Vista, Fla., Dec. 14-15 — Contact: Comforum, Suite 740, 303 E. Wacker Drive, Chicago, Ill. 60601.

Fiber in the Subscriber Loop Forum. Orlando, Fla., Dec. 14-15 — Contact: Comforum, Suite 740, 303 E. Wacker Drive, Chicago, Ill. 60601.

JAN. 8-14

ATE & Instrumentation West Conference. Anaheim, Calif., Jan. 8-11 — Contact: MG Expositions Group, 1050 Commonwealth Ave., Boston, Mass. 02215.

PC/Desktop Printing: Expectations & Reality. Monterey, Calif., Jan. 10-12 — Contact: BIS CAP International, One Longwater Circle, Norwell, Mass. 02061.

Pacific Telecommunications Council's 12th Annual Conference. Honolulu, Jan. 14-17 — Contact: PTC '90, Suite 308, 1110 University Ave., Honolulu, Hawaii 96826.

JAN. 15-21

Technical Conference on the X Window System. Boston, Jan. 15-17 — Contact: MIT X Consortium, Room 217, Laboratory for Computer Science, 545 Technology Sq., Cambridge, Mass. 02139.

Computer Graphics Show. New York, Jan. 16-18 — Contact: Computer Graphics Show, No. 409, 817 Silver Spring Ave., Silver Spring, Md. 20910.

Superconductor Applications Global '90 Convention. Long Beach, Calif., Jan. 17-19 — Contact: Superconductor Applications Association, 24781 Camino Villa Ave., El Toro, Calif. 92630.

Network Security in the Federal Government Seminar. Washington, Jan. 18-19 — Contact: Infonet Seminars, Attn: Network Security Division, P.O. Box 162323, Austin, Texas 78716-2323.

Software Support Conference. San Francisco, Jan. 18-19 — Contact: Conference Administrator, Institute for International Research, 6th Floor, 331 Madison Ave., New York, N.Y. 10017.

JAN. 22-29

Improving Productivity in EDP System Development. Mesa, Ariz., Jan. 22-26 — Contact: Applied Computer Research, P.O. Box 9280, Phoenix, Ariz. 85068.

Infotext '90. Las Vegas, Jan. 23-24 — Contact: Infotext Publishing, Suite 309, 347000 Coast Highway, Capistrano Beach, Calif. 92624.

Macuser Marketing Conference. San Francisco, Jan. 25-26 — Contact: Macuser, 18th Floor, 950 Tower Lane, Foster City, Calif. 94404.

An Overview of Information Engineering. Washington, Jan. 29 — Contact: James Martin Associates, Suite 200, 1850 Centennial Park Drive, Reston, Va. 22091.

JAN. 30-FEB. 5

Infocomm International. Anaheim, Calif., Feb. 1-3 — Contact: The International Communications Industries Association, 3150 Spring St., Fairfax, Va. 22031.

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EXECUTIVE REPORT

COMPUTING IN THE EXECUTIVE SUITE

Viewing data without the filters

BY MICKEY WILLIAMSON

Philip B. Fletcher, president of Conagra, Inc., would not think of hitting the road without his laptop computer. "I carry it with me when I travel and do my electronic mail from my hotel room each night so it doesn't get ahead of me," says Fletcher, chief operating officer of the Omaha-based conglomerate whose activities span the food chain from fertilizer to frozen TV dinners.

Even at corporate headquarters, Fletcher is seldom far from his keyboard. Although he and Conagra Chairman Charles M. (Mike) Harper sit in adjoining offices, many of their most productive conversations take place via computer.

"We communicate with one another on the tube, so we don't have to try to find the time when we can both break from another meeting and talk. If [either of us has] a thought, we just put it on the tube right away, and it's there," Fletcher says.

This kind of regular contact with computers is still the exception among senior executives. "There are the occasional executive success stories, but I don't believe that at this point, those represent a trend," says Fred Collopy, assistant professor in the management information and decision support department at Weatherhead School, a business school at Case Western Reserve University in Cleveland.

Theories abound to explain the lack of computer use by senior executives. Citing Henry Mintzberg, author of *The Nature of Managerial Work*, Collopy says, "We know from Mintzberg's work that executives spend an awful lot of their time communicating, walking around and looking at things. It's very hard to see that being substituted for currently, even by



STEVE JENNINGS/PICTURE GROUP

Robert Wallace, former president of Phillips 66, preaches a hands-on philosophy

good communication systems."

Marvin Manheim, a professor in the Kellogg Graduate School of Management at Northwestern University in Evanston, Ill., and chairman of Cambridge Systematics, Inc., a management consulting company in Cambridge, Mass., observes that managers tend to deal with "a network of issues, problems, opportunities and agendas for action. They are continually shifting their attention and working on new issues and new problems." None of the existing information systems packages described as executive support or decision support are very well

adapted to that pattern of work, Manheim says. Still, there are some reasons to believe that the picture is starting to change.

Manheim, for instance, says he is starting to see pieces of the capability that senior executives need in some new software tools, such as those classed as personal information managers.

Furthermore, the small band of converted top executives is starting to produce some zealous ambassadors. One of the most fervent and tireless advocates of executive computing is Robert G. Wallace, the recently retired president of Phillips 66 Co. and executive vice-president of its

parent, Phillips Petroleum Co., both in Bartlesville, Okla.

To a certain extent, Wallace's introduction to the computer as an executive tool was forced. His decision to commission the development of an executive business system at Phillips 66 four years ago was an economy necessity.

As part of a financial and structural reorganization in 1985, the company reduced its total head count from 25,000 to 22,000 and its support staff from about 35% of the company to 15%. With that kind of cutback in support personnel, Wallace explains, "We didn't have the

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Learning from the mistakes of others

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Don't underestimate the expense of executive support

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Williamson, a technical journalist based in Warwick, Mass., wrote the Seybold Office Computing Group report, "Executive Support Systems: Concepts, Tools, Techniques."

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Avatar

Viewing data

FROM PAGE 79

staff people to massage the data, organize it, interpret it and send it to where it was needed." If the company was going to keep operating in an efficient and informed manner, there was no choice: Executives would have to learn to fend for themselves.

What started as a make-do proposition has turned into something of a crusade for Wallace, who now spends much of his time talking with individuals and management groups about spearheading development of what he calls an "integrated business system." What he discovered in working with the Phillips 66 system, which was based on IBM's Professional Office System, he says, is that an information-rich computing system is a must in the executive suite.

"Participative management is nothing unless you delegate authority," he says, "and you can't delegate authority if you don't have the information."

Another reason that hands-on use of computers is becoming more crucial for top executives, Wallace says, is the increasing burden of responsibility for protection of shareholder assets. The time-honored executive defense that says an executive is not responsible for things he does not know about is no longer acceptable, according to Wallace. "Executives can no longer hide behind the statement that they didn't know and were not informed," he says.

As Alexander tells it, when James Orr, the company's chairman, arrived near the end of 1986, "He was accustomed to a pretty avant-garde technology and organizations that closed their books on a daily basis. One of the first things he said was, 'I'd really like to see what's going on in Unum on a daily basis.'

The first database tapped was human resources, Alexander recalls, "because it was both available and critical to some business objectives we were trying to accomplish at the time." Specifically, the company was trying to reduce hiring levels, and access to personnel records gave the chairman the ability to track new-hire activity.



HP's Frankenberg

Since then, the system, which is based on the Command Center package from Pilot Executive Software in Boston, has been extensively customized and amplified, growing to include sales statistics, production data and information about customer service. Financial reports will be added this winter, Alexander says: "At that point, we'll have about 90% of the business areas covered and daily information on what's really going on." Use of the system has also expanded, according to Alexander. Where once the only browser was Orr, all of the company's senior executives are now equipped with computers.

In large part, Alexander explains, the surge of interest in on-line access to information is a function of recent changes in the insurance industry. Staying on top of developments as they happen is becoming more important, he says: "The insurance industry is going through a whole series of interesting transitions, and the markets that we are in are becoming more competitive."

Executives at Fisher-Price Toys, Inc. in East Aurora, N.Y., are also peering into computer screens for insights on buying patterns and changing juvenile tastes.

Gerry Drinkard, manager of information systems at Fisher-Price, says all of the company's top executives use a computer for an hour or two each day. Vice-President of Sales Byron Davis says the information his computer provides is "absolute-



Conagra's Petty

ly critical." As recently as 1985, Davis explains, "We got a report every month about what we sold and shipped. It's unbelievable, if you think about it, that you'd be in the dark for 30 days."

However, it is not only vice-presidents who find daily access to data important. According to Drinkard, the president of the company also spends roughly a quarter of his time "turning the data, modifying it, trying to make sense out of the information and trying to forecast where we're going."

Sometimes the information that top executives most need to know are the kinds of things that they least want to share, and that is when an executive support system can be particularly handy, says Joan Dixon, internal information technology consultant at Mutual Benefit Life Insurance Co. in Newark, N.J. According to Dixon, the president and most of the vice-presidents at Mutual Benefit make regular use of a system consisting of Comshare, Inc.'s Commander EIS and the Intellect natural language product from AI Corp. in Waltham, Mass. The system gives them access to more than 28 different company databases. "They have business analysts," she says, "but a lot of the time the information they want is of an extremely sensitive nature. They wouldn't want to let anyone know they were asking the question."

Information in hand also means increased power to effect desired changes, as is demonstrated in the way that Richard Crandall, chairman of Comshare in Ann Arbor, Mich., chooses to use his own company's product.

When he wanted to convey

the importance of rapid response to customer inquiries, Crandall began using Commander EIS to track the percentage of incoming calls that are responded to and "cleared off the docket" in one day.

Twice a week, Crandall looks at a compilation of calls logged in and calls resolved and sees to it that the rest of Comshare's executives receive the same information. After collecting data for 18 months, the company established a corporate goal for that measurement, "with agreement from everyone that we want to get better and better at it," he says. "It motivated us to look at those calls that didn't get resolved in one day. We used that for guidance in how to improve our track record."

Although nobody claims that executive computing leads senior managers to shout "Eureka!" and fire off a volley of brilliant new directives to their subordinates, there is general agreement that a well-thought-out business information system can help executives spot and react to trends more quickly.

IS recognizes role as teacher

Promoting technology awareness among top management ranks high in a list of 240 senior IS executives' most important concerns

1. Using IS for competitive advantage
2. Aligning IS and corporate goals
3. Educating senior management on IS potential and role
4. IS strategic planning
5. Developing an information architecture

SOURCE: INDEX GROUP, INC.

CW CHART: DOREEN DAHLE

atives can stay in touch with everything that is happening from the road or from home. Many, for example, keep personal computers at home and check in on weekends for the latest sales figures.

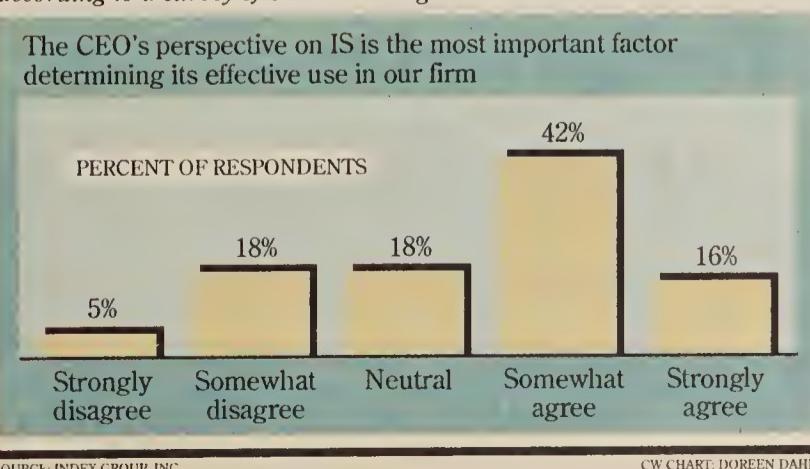
Obviously, with more businesses operating in multinational mode and competing in a climate of fast-paced international competition, the ability to send and receive information outside the normal constraints of business hours is a significant inducement for many executives to adopt computer use.

Collopy, who recently studied computer use among executives at IBM, found considerable use of electronic mail for "time shifting," using the computer as a means of communicating with subordinates, colleagues and business partners in other time zones and other parts of the world. "They are much more prone to act at 6:00 in the evening their time," he says, "if they can send a note that they know will be received when the other person gets to work in the morning."

Some companies also find that when executive use of computers takes the shape of a

Follow the leader

The chief executive officer wields strong influence on technology directions, according to a survey of 628 IS managers





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formal EIS, the very act of developing the system uncovers and helps to demolish some internal barriers.

Because executives are most interested in data aggregated from the entire portfolio of operating units, a considerable amount of work goes into clarifying terminology. Each operating unit tends to develop its own vocabulary, Fisher-Price's Drinkard points out. Thus, a term such as gross sales means something different to every organization within the company. Drinkard explains, "Just defining the vocabulary and the terminology to be used adds structure that had

never been there before."

At Hewlett-Packard Co.'s Information Systems Group in Palo Alto, Calif., where an EIS product called Executive Insight was first developed for internal use, Robert J. Frankenberg says that one major benefit the company derived from its own use of the product was internal agreement. "We used to spend an incredible amount of time [on questions such as] 'Is that right? Has that been confirmed? That's your data; my data says the real orders have been this.'" Now, Frankenberg says, the data always come from the computer system; it has been audited and

is available to everyone. "We don't spend time arguing about my data vs. your data. We go after the problems, rather than figuring out who is right."

Getting executives to accept computers in their offices is not as difficult as the mythology surrounding executive computing would suggest. Unum's Alexander says, "In some cases, we have a demand situation where some of the more aggressive executives are pulling technology through the channel. In other cases, we have systems people who have developed a vision of what they can help the business clients they're serving to accomplish, and they're pushing technology."

directly to him from two to nine, he put each one on the system.

"I didn't tell them they had to use the system," Wallace says. "I told them I was going to give them all the information I had on my system. That meant they had, for the first time in their careers, all of the information that the absolute senior executive had. If you were in marketing, you had not only marketing information but manufacturing, supply — the total corporate identity right on your computer."

Today, Wallace says, all but one of the company's senior managers uses a computer.

It is reasonable to wonder what changes, if any, executive use of computers has brought about. Answers vary from the ability to inspect operating results untinged by the opinions and prejudices of others, to realignment of personnel, to sweeping alterations in company culture.

"There's no question that computers have changed things," Conagra's Fletcher says. "You eliminate all the filters." Before the computer arrived on his desk, he explained, during the budget process, presidents of each operating company would phone Fletcher to give their profit estimates. The computer, he says, has done away with "all the positioning and posturing that might take place before [the president] announced that he had to lower his profit. Now, it just comes up on the screen and eliminates all of the smoke and mirrors. We very quickly address the issue and get at what we're going to do to correct it."

Eliminating filtering and buffering can also mean less administrative layering. For example, at Fisher-Price, Drinkard says, "We've taken away a lot of intervening clerical work that used to be required to prepare information for somebody, and we've given the information right to that somebody."

And, as HP's Frankenberg has discovered, once data has been consolidated and reconciled with an EIS, the impenetrable sometimes becomes suddenly clear. "I used to say that the only thing more difficult than getting accurate people counts was achieving peace in the Middle East," he says. "At Hewlett-Packard, we've got five different operations throughout the world, and we could never accurately say how many people we had working on which thing."

Perhaps the most sweeping change is the one Wallace reports: freedom of information throughout the enterprise. He says, "I established right from the beginning that all the information in the corporation, all the data, was a resource of the corporation and was not privy to any group, division or section; that we would use that information [in any way] that most effectively accomplished our mission."

Wallace says this to executives who doubt the usefulness of computers for the work they do: "It's not *if* you're going to have it, but *when* you're going to have it. The fact is that if you don't have it, you're going to be competitively disadvantaged, and you won't be in the game to play anyway. I'm convinced of that. I think the executive who is saying, 'I don't need it' is either deferring the decision or setting up the demise of [his] own corporation."

Some attachments are brief

Generally, as executives become more proficient with the keyboard or mouse, they tend to use their computers more. However, that is not always the case.

At Transamerica Insurance Co. in Woodland Hills, Calif., Carl Rahmquist, vice-president of support, notes declining use of an inquiry system based on Intellect, a natural language from AI Corp. in Waltham, Mass.

This past spring, Rahmquist reports, division-level presidents were "without exception" using Intellect to monitor the company's performance from a sales database that is refreshed weekly. Now, he says, "most of them

don't really do it themselves. It's such a simple process that the secretaries always do it for them." The exception, he says, is that "sometimes, over weekends, they dial in to our computer from home and get the results of the bookings over the weekend."

Right now, Rahmquist says, interest in production of business graphics is creating a flurry of demand for personal computers among Transamerica executives. Based on experience, however, Rahmquist expects that this, too, will turn out to be a short-term interest to executives. Once production of graphics becomes routine, he says, executives will probably turn that job over to assistants as well.

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Conagra's Fletcher

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INTERVIEW

Standing on the shoulders of technology

Computers can aid executive vision and boost careers, says George Hatsopoulos, who credits them with an assist in gaining the top post at the Boston Federal Reserve Bank.

George Hatsopoulos is one of the rare chief executives who takes a hands-on approach to computers, writing his own software for business and economic modeling. Hatsopoulos, who is the chairman and president of Thermo Electron Corp. and also currently serves as chairman of the Federal Reserve Bank of Boston, helped pioneer the use of computers for decision support in the late 1970s.

Formerly a professor of thermodynamics at MIT in Cambridge, Mass., Hatsopoulos writes programs in APL that run on an IBM mainframe at Thermo Electron, a maker of high-tech instruments and industrial equipment with sales of \$501 million last year. Computerworld Senior Writer David Ludlum spoke with him recently about what computers can do for top executives.

What prompted you to start using a computer for business analysis?

In the late 1970s, it occurred to me that I could get a much better understanding of what was going on in the firm, and also receive very quick updates, by getting most of the financial data on-line. That capability was particularly important for me at that time because I was trying to create some five-year business plans and strategic plans for the company.

Having access to past results, as well as profit projections and investment requirements for all the divisions, made it possible for me to develop a planning model. Access to that information also let me run the company on a hands-on basis.

What value have you found in doing this kind of work yourself?

As a result of having done this on a computer myself, I know what can be done, and I also know what kind of information I want. One of the problems I find that CEOs have is that they are not very familiar with computers or with the way that their planning models are created, and as a re-

sult of that lack of understanding, they are not really getting as much out of their staff as they could.

Do you think that other chief executives should use a computer in this way?

I am definitely of the opinion that if you are running any kind of business, you are going to run it better if you're capable of doing the job of each one of your subordinates and even those of others further down the line. That gives you a lot more insight.

Is there anything specific about working directly with a computer that makes this hands-on approach particularly valuable?

Yes. Working with the computer itself gives you the ability to think up and respond to your questions in such a short term that it opens up your inquiries into the data.

If you look at data and say, "Wouldn't it be nice to calculate, say, what return our acquisitions have had over the years," and then you give it to a subordinate and it comes back two days later — two days later you've forgotten your train of thought, why you asked that.

But if you can get the results immediately, then immediately you can go on to ask another question and another question, and it develops ideas. You start thinking, "How about looking at it this way? How about segregating by the people that ran the acquisitions or by the type of business? How about the acquisitions before the 1982 recession? How about after?"

The more answers you get, the more questions and ideas you generate. That is one of the most important aspects of working with the computer.

Is it important for top executives to play some role in designing the applications they use?

Designing applications gives you a lot more insight into the capability you have for manipulating data and the limitations. You know which things are difficult

and which are simple.

But that's true with a lot of things. You also get more value if you understand the work of your legal department or your accounting department or your research and development department.

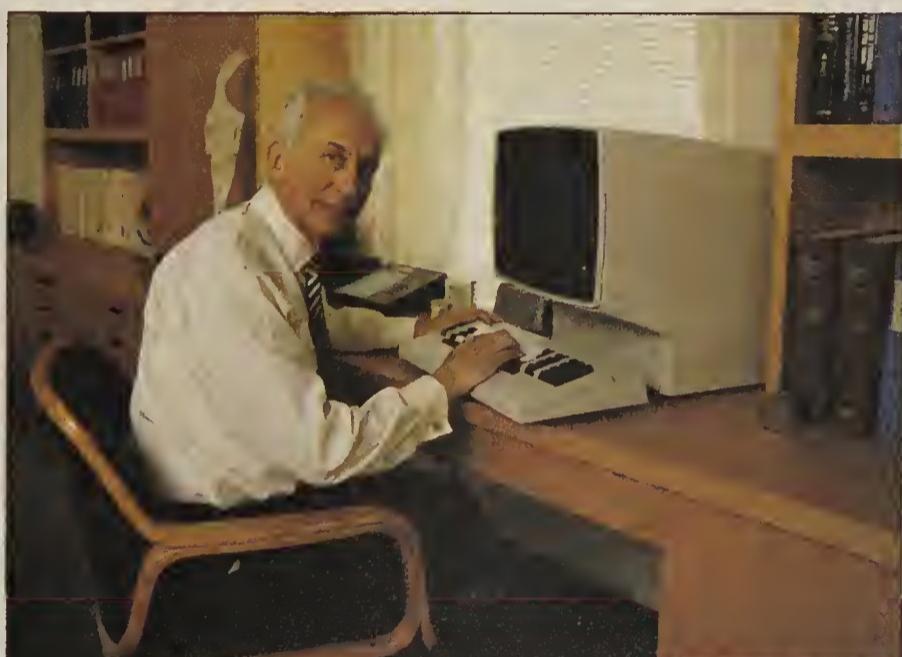
So it depends on how much of that you can do as a CEO. But you can do a lot because you don't have to do [everything] at

executives are using computers in this way?

No, I do not really think so. I think it is a very small minority that do.

What led you to get into economic modeling?

In addition to running the company, I have always had a side hobby, and most of those hobbies have been analytical. During the



Hatsopoulos encourages more executives to use technology

the same time. Some years you may concentrate on this and that and some other year another function.

You said you once spent two hours a day at the computer. How much time do you spend on it now?

For the last 12 months or so, I have probably averaged two hours a week on my computer. At the end of the day, I may spend an hour doing something on the computer. It may be analysis of our business or financial and market trends. Sometimes it is analysis of what our customers are doing.

We have on-line access to [Standard & Poor's Corp.'s] Compustat, so if we're selling to General Motors, we can see what their capital expenditure plans are. If we're selling to IBM or to AT&T, I want to see what the state of affairs is.

Do you believe many chief

1960s and 1970s, I wrote three books on thermodynamics — more for relaxation than for a professional need.

Then, I got very interested in economics. In the past 10 years, I have written a number of papers on competitiveness, on cost of capital and on capital formation in the U.S., all of which require economic modeling.

Do you think that your computer fluency has helped you further your career, specifically in becoming chairman of the Federal Reserve Bank of Boston?

There is no question about it: The use of the computer makes you much more imaginative, and therefore, it helps you no matter what you are doing. As a result of it, I certainly was able to make more contributions than would have been likely for someone who is not a professional economist. •

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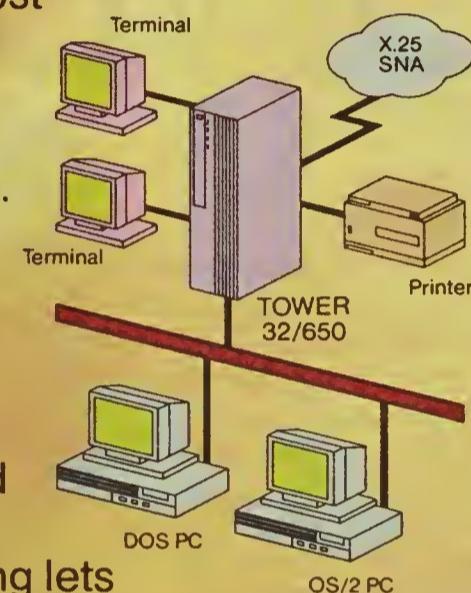
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Creating value

Common and avoidable causes of EIS failure

BY HUGH WATSON
and HARRY GLOVER

If at first you don't succeed with an executive information system, you are in good company. A close look at the foundations of currently successful EIS projects frequently reveals traces of

earlier efforts.

For example, an adapted version of a commercial EIS is now in regular use by 140 executives and managers at a major railroad company. However, an earlier system that was developed entirely in-house "withered and died on the vine."

In fact, of 50 firms with a successful EIS recently surveyed by the University of Georgia, 21 indicated that they had experienced a previous failure.

Although this failure rate appears high, it may actually underrepresent reality. Many respondents may have been un-

aware of prior attempts or reluctant to admit a setback; there may also be firms that, having tasted failure, never pursued the idea of an EIS any further.

Intrigued by the high fatality rate, we decided to investigate further by contacting 21 organizations that we knew had experi-

enced an EIS failure to find out what had happened and why.

One fact that emerged quickly was that failure was a word that could have many shades of meaning. The examples cited included systems that were never completed, systems that were used for a while and then discarded, and systems that are still in place but used by people other than the original target audience.

Combinations of problems

A total of 23 reasons for failure were mentioned in the interviews. In nearly all the firms, several factors had combined to cause the demise of the system. Some of the problems most frequently mentioned include the following:

- Inadequate or inappropriate technology.
- Lack of executive commitment.
- Failure of the system to meet user needs.
- Executive resistance to technology.

Some of the most common manifestations of inadequate or inappropriate technology are executives who find the system too difficult to use, systems that are not capable of delivering information in an appealing format, and systems that are too difficult to maintain.

These types of problems are most likely to surface with custom-built systems as opposed to commercial products.

At the railroad mentioned earlier, for example, the initial homegrown EIS provided only textual output for executives. Navigation through the system was performed using function keys, which was considered too difficult by users. It was also difficult to automatically feed data into the system, which made it hard to maintain.

Several of the firms interviewed reported that they had developed their unsuccessful EIS around a decision support system (DSS) product; they said that these systems were not well received.

While DSS software is good for analysis purposes, its command language syntax is not sufficiently user-friendly for the vast majority of executives.

It is conventional wisdom that an EIS requires an executive sponsor. One supporter, however, no matter how highly placed, is not enough to guarantee a system's acceptance, especially in the face of political resistance or economic hard times. Besides, there is turnover even at the top; if the sole sponsor leaves the organization, an EIS project is not likely to survive.

In at least one instance we know of, even CEO support

Watson is chairman of the MIS program at the University of Georgia in Athens. Glover is an associate professor at Georgia College in Milledgeville.

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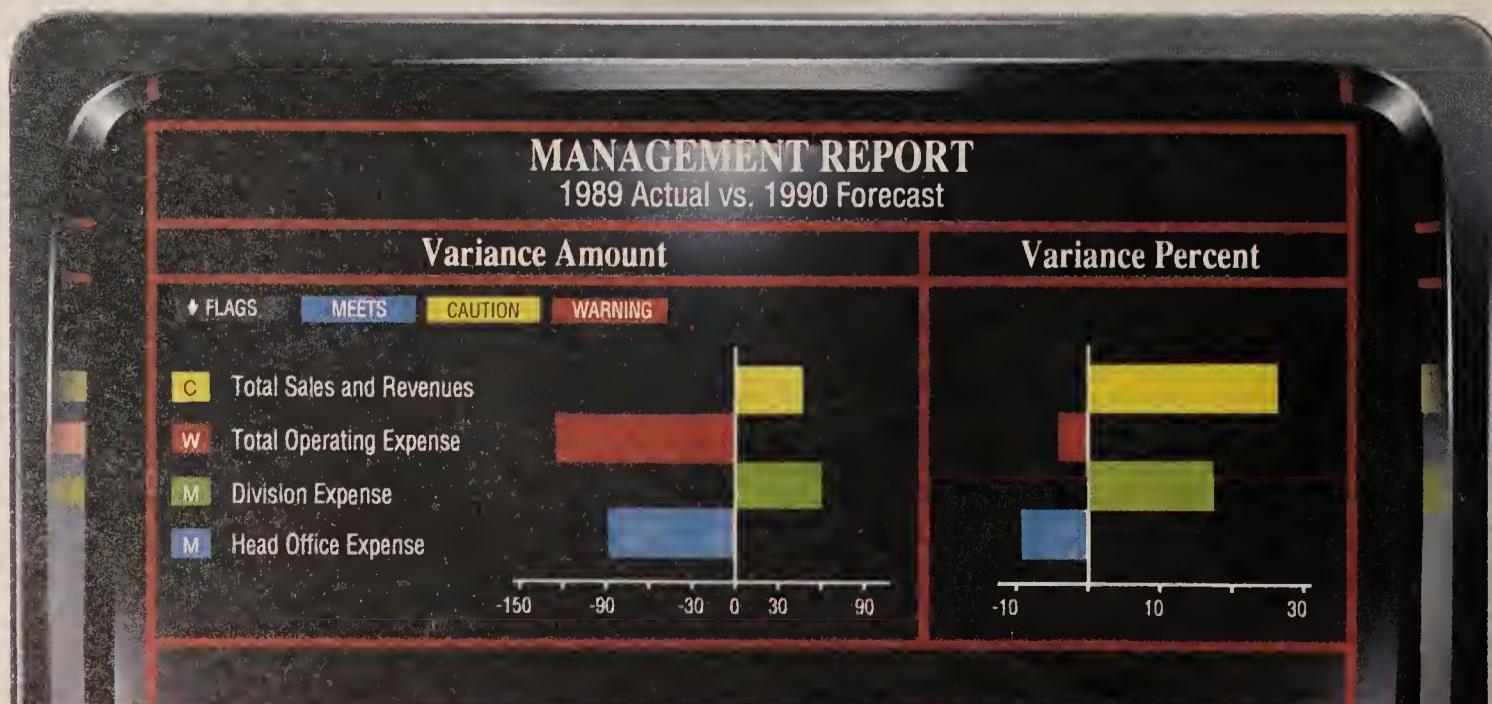
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* "Decision Support and Executive Information Systems: Markets and Trends," International Data Corporation, November 1988.



could not save an EIS when other executives turned their thumbs down. This was a communications corporation with a number of fairly autonomous operating units; the CEO had directed the IS staff to build an EIS linking him with the vice-presidents of those operating companies. The system, built according to the CEO's vision, was

Based on interviews with companies that have tasted failure in attempts to implement EIS projects, executive resistance is a less significant contributor to the demise of such projects than faulty system selection or poor requirements definition. Below is a percentage ranking of the most-mentioned causes of EIS demise.

- Inadequate or inappropriate technology . . . 64%
- Failure of the system to meet user needs . . . 59%
- Lack of executive commitment . . . 52%
- Executive resistance to technology . . . 28%

perceived by the operating company executives as forcing unnecessary horizontal communications. They also thought that it negatively affected downward communications in their own companies with lower level personnel. Three different consultants were brought in to save the system, but ultimately, it was abandoned and no efforts have been made to resurrect it.

Another major communica-

tions firm reported that although the CEO was the driving force behind the development of its EIS and was present throughout the whole process, when an economic crunch demanded critical evaluation of maintenance costs, its value was judged to be insufficient, and the EIS was scrapped. To date, no new EIS efforts are under way in this firm.

A somewhat different twist on the same theme was played out at a major utility. There, the IS staff was deeply involved in an EIS project that had received strong support from the highest level when the CEO departed. This event led to the demise of the EIS. We were told, "New CEO, new consulting firm, new ball game — emphasis was shifted to a new MIS system, and the EIS was shelved." The subject of another EIS project has never come up.

Death by disappointment

There are several ways that an EIS can fail to meet the needs of users.

One possibility is that the reasons for developing the EIS are not carefully considered and articulated to the system's designers. The outcome: an EIS that is satisfactory but does not solve the organizational needs that motivated its development.

Another possibility is that the executive users do not take the time and effort to communicate their specific information requirements to the EIS staff. The resulting EIS is based on a combination of input from support personnel and guesswork; this combination may not result in a system that meets the executives' needs.

The EIS developed at one large Midwestern firm, for ex-

Not for executives only

Executive support systems are not always just for executives. In fact, Clint Kreitner, president and chief executive officer of Reading Rehabilitation Hospital in Reading, Pa., prefers to call the hospital's decision support system an "enterprise information system."

The reason: When fully implemented, the system, which now provides decision support data to Kreitner and other senior managers, will be available to workers throughout the hospital. "We want to use the power of information to direct the behavior of the staff toward desirable outcomes," Kreitner says.

The hospital plans to place several personal computer-based terminals, each equipped with a mouse, at locations where staff members will have access to them. Officials are still deciding where to put the PCs.

Kreitner says he has three responsibilities as

a chief executive: creating a strategic plan, devising a corresponding organizational plan and using information to align employees with the strategy. "We have lots of information," he adds. "The problem is delivering it to people in an accessible form."

The decision support system classifies information by five functional areas — patient care, customer service, finance, human resources and sales and marketing. These categories are further subdivided, and at the end of each branch of the menu is a graph, table or report illustrating what Kreitner calls "outcome indicators" that show whether intended results are being realized.

The system, which was implemented at a cost of about \$4,000, is based on the \$1,500 Redimaster software package from American Information Systems, Inc. in Wellsboro, Pa., and runs on DOS workstations.

DAVID LUDLUM



Reading's Kreitner

ample, provided an excellent graphics presentation of which customers contributed the most to corporate revenue. The designers of the system knew that they had missed the mark, however, when the CEO said, "I know about these. How about the customers we lost or didn't get? Who are they? How much revenue did they represent? To whom did we lose them? Why did we lose them?"

At another company, a large textile concern, an EIS was developed in response to a CEO's request but without clear articulation from him of his exact objectives. EIS implementors did not know what information was

needed, and no one else was able to tell them. When the CEO viewed the system for the first time, his comment was that the system gave him about 1% of what he was looking for.

Executive technophobia

Vendors and consultants like to imagine a CEO sitting at a terminal happily browsing through screens of relevant information and occasionally performing drill-downs to ferret out details when problems are detected.

Although there are executives who are willing to embrace technology to that degree, they are still outside the norm.

In fact, in many instances,

computer technology is held in very low esteem by the executive ranks. This was clearly the case at one company interviewed, where executives spent thousands of dollars on office furniture to hide the personal computers that accessed the EIS — having a computer on the desk was not considered congruent with executive status.

There is good news in these stories of EIS failure. Some of the companies described learned from their failure and later found an eventual path to success. By avoiding the problems discovered in our study, EIS developers can decrease their chances of experiencing a similar failure. •

Education before implementation

Top executives will use computers if and when they see a clear and present benefit in doing so. Until that happens, says Garret L. Sheldon, president of The Potomac Group, an information technology consulting firm in Cambridge, Mass., attempts to entice and cajole them are probably a waste of time and energy that could be channeled more productively into educational efforts. Getting top executives to use computers is, in the final analysis, less critical than getting them to understand the value of information technology.

In order to make informed decisions about technology investments and information requirements, executives must have a well-founded understanding of information systems and what they can do, Sheldon says. This awareness requires knowledge of computers at several levels. None of these knowledge areas necessarily involve interacting with a keyboard, but all of them do require some educational effort on the part of IS executives. A good executive

computing foundation, according to Sheldon, is built on the following:

- **A broad grasp of basic technology concepts and terminology.** This kind of knowledge can be passed along informally in the course of normal business exchanges. For instance, an IS manager could make budget presentations using an electronic storyboard on a PC, allowing senior executives to see a helpful business function for technology in action. Another good method for feeding executives general information about technology is the age-old managerial technique of an FYI note. IS managers could periodically pass along a newspaper clip on how IS can affect business issues, asking the executive whether that is information that interests him.

IS managers can also familiarize executives with technology simply by showing them what their own company uses. Sheldon suggests offering a tour of the computer room.

- **Current knowledge about trends in information technology and their potential impact on the busi-**

ness. The more an executive knows about where technology is going, the more closely he can align it with where the business wants to go. Sheldon advocates IS participation in strategic planning meetings so that technology can be discussed in the context of business goals. He also suggests buttonholing executives for informal chats about new technological developments. Brief informal chats in hallways are a staple of an executive's day, he says, and an excellent forum for updates.

- **The ability to assess current corporate IS capabilities and evaluate future technology proposals.** Without a solid grasp of what capabilities the IS function has, top executives cannot easily evaluate current performance or envision future contributions. IS can help executives get a better grasp on the company's IS activities and gauge their effectiveness by developing what Sheldon calls evaluative models. For example, the IS manager could present budget data to a senior executive in much the same manner as a financial model.

Such a model would demonstrate how equipment, people and other resources are allocated to each business function and strategic objectives rather than simply how much is spent on hardware or software or salaries. Executives then could better judge whether changes in IS capabilities or reallocation of resources is appropriate.

According to Sheldon, concentrating on building general familiarity with computers at these levels is much more likely to result in a computer-literate executive than some of the more direct approaches, such as placing a PC on the executive's desk, training him to write small programs or attempting to convince an executive of what computers can do by developing an executive support system. If you start by fostering a general acquaintance with technology, Sheldon says, executives are much more likely to seek out direct contact with computers. And that's really the only way that executive computing works — if the executive makes the request.

LAURA O'CONNELL



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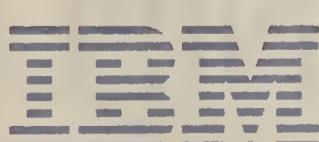
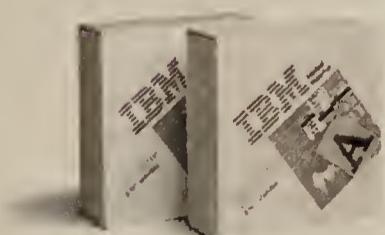
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System purchase price is just the down payment

BY DAVID LUDLUM

Executive information systems come in different sizes and different prices. You can spend as much as a million dollars for a sophisticated system or something in the neighborhood of a thousand dollars for a simple one based on a personal computer. Whichever route you choose, though, there is one thing that doesn't change: The total expense will far surpass the ini-

tial investment in hardware and software.

The biggest hidden costs in implementing an EIS stem from the need to restructure data and modify systems so that previously unrelated information can be brought together and presented on an executive's desk. "Ninety percent of the effort is the data side," says Alan Paller, a consultant in McLean, Va., who specializes in computer graphics and EIS.

Costs can also flow from customizing

systems for executives. The time that executives spend helping to design and learning to use the systems must be considered. There are also ongoing operating costs. "If you're going to go into this, think about it hard," says John Rockart, director of the Center for Information Systems Research at MIT. "It's not just buying a quarter of a million dollars' worth of software or assigning people to build software for six months."

Even if the scale of the effort is small-



Lockheed's Houdeshel

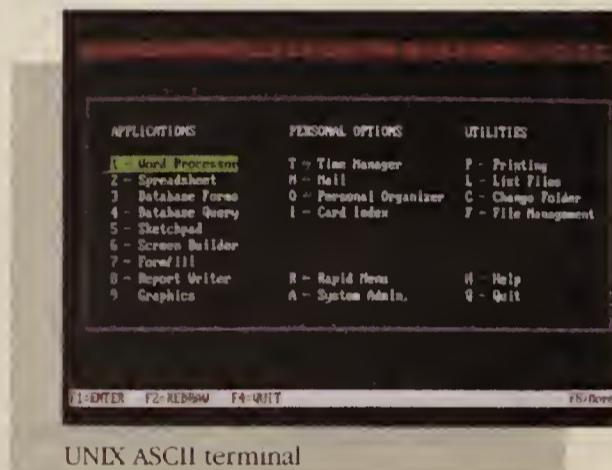
er, says David Ness, a consultant in Reading, Pa., the same rule applies. Supporting an executive who has purchased a PC can cost several thousand dollars.

Whatever the scope and cost of an EIS, the need to "get your data ducks in a row" can be relatively expensive, says David De Long, a research associate at Harvard Business School. Those costs might start with the need to link an EIS to existing systems or to overcome incompatibility among computers that will feed data to the EIS. "You suddenly want lots of different kinds of information to flow to one spot," Ness says.

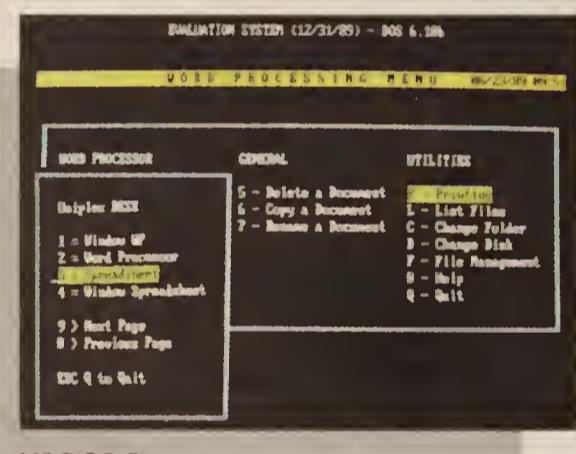
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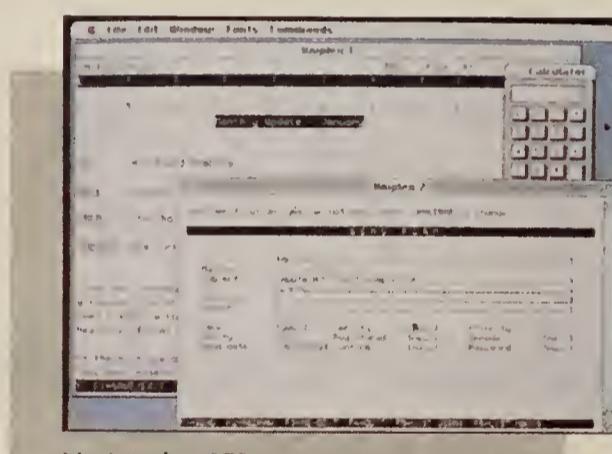
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A TASTE of information access creates a growing appetite, necessitating additional development and integration.

Data structures also have to be reconciled. Lockheed Aeronautical Systems Co., for example, had to reconcile three incompatible definitions of an expected sale in channeling revenue information into its EIS. According to George Houdeshel, manager of the Management Information and Decision Support System (MIDS), Lockheed invested 10 man-years of programming and systems analysis as well as \$350,000 for hardware when it developed MIDS 11 years ago.

The system, which the company is now considering replacing, is unusually comprehensive in providing executives with decision-making information on production as well as financial and market data.

With systems that are not quite as complex, integration issues are of less concern. In some cases, particularly when the support system is simple and geared mostly toward individual use, you can avoid integration expenditures by drawing reports from disjointed systems and rekeying data if necessary, Ness says.

Taste treat

What often happens, however, is that a taste of information access creates a growing appetite, necessitating additional development and integration. "There is a whole family of supporting information systems often created because top management starts to look at data," Paller says. "If you figure that into the cost, you could put any number on it."

As the number of applications and the number of people using a system grow, so do expenses. For a sophisticated EIS, Rockart estimates that ongoing costs of operation can be up to \$2 million per year. These figures reflect computer time, software maintenance and the gathering of internal and external data.

Lockheed Aeronautical proves that point. The firm devoted 15 man-years to creating screens and updating its system during the first five years of use, Houdeshel says; restructuring data is "an ongoing process." •

Ludlum is a *Computerworld* senior writer.

**Some
questions to
ask before you
bet your business
on a relational
database.**

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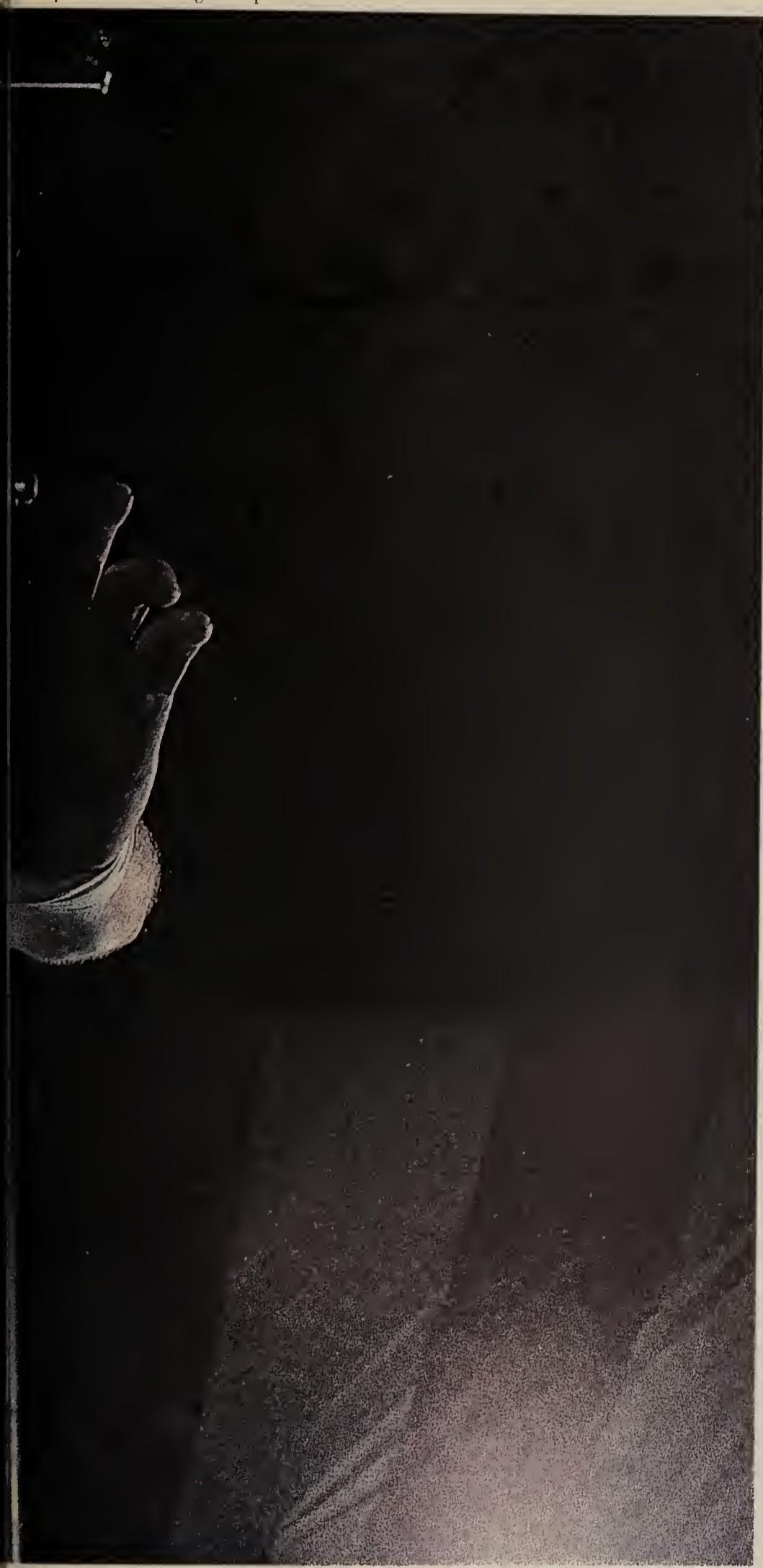
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What's more, Ingres's application development tools are fully integrated, more complete and incorporate a full-function 4GL. So you can prototype, deploy and maintain complex applications more easily, efficiently and with complete portability.

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s than the best?**

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The Ingres logo consists of the word "Ingres" in a bold, black, sans-serif font. A thick horizontal bar is positioned below the letters "g", "r", "e", and "s".

Intelligent database. Intelligent decision.

Battling guru hoodoo

A literary treatise in which our authors argue that technical 'experts' should seek to enlighten, not confuse

BY JOHN ESPY
and JIM HOWE

Editor's note: Sadly, the practice of using jargon and specialized technical knowledge to obscure rather than illuminate darkens many disciplines. While our authors, who work for a computer course development firm, chastise so-called subject matter experts (SME) — hired brains who provide expert know-how in a specific field — they assure us that their indictments (and prescriptions) apply equally well to other speakers of such technobabble. Purveyors of legalese, governmentese, business-speak and the dozens of other pseudo-English variations that daily pollute our professional lives — take note.

Want to know an easy way to chase away late-staying party guests this year? Just walk into the middle of the room and, with your most innocent expression, ask loudly: "Hey, why doesn't everyone stick around a little bit longer? The Cobol 85 experts will be here any minute now, and they're just dying to talk with you!"

Chances are you won't see too many blissful smiles. In fact, you probably won't see *any* smiles, because the room will soon be empty. Few things can scatter folks like the promise of long-winded, jargon-packed spewings from a technical expert.

Of course, partygoers who

Espy is a product design specialist at Computer Systems Research (CSR), a computer course development company in Avon, Conn. Howe is manager of industrial product development at CSR.



PHIL MARDE

are brave (or angry) enough to stick around even after being warned may offer some zesty comments.

"He didn't deliver anything close to what we wanted!"

"She tried to completely take over the project!"

"He acts like he's the only one who knows anything!"

"I'll kill her!"

Sound familiar? If so, chances are that you've dealt with a technical expert.

At some point, most IS professionals must communicate or receive detailed technical knowledge. Often a necessary evil, such subject matter experts can drive others crazy with endless, pectoral recitations of technical jargon.

Must well-meaning profes-

sionals suffer the confusion and intimidation of so-called experts without a whimper?

Conversely, can these experts continue to be exempt from the rules that normally govern decent, clear communications? We say, "Nay."

All of us must consider ourselves warriors in the never-ending battle between the forces of clear thinking and clear expression and the gurus who use knowledge to hamper — rather than facilitate — understanding. The following is a literary examination of the problem and some solutions.

Role of the expert

Once upon a midnight rotten, working on a course forgotten, wondering why my adjectives

came after nouns and not before.

While I pondered, weak and weary, wishing I were Gloria Gery — suddenly there came an eerie knocking at my office door.

"Tis some idiot," I muttered, "looking for the package store. Only this and nothing more."

Then, unseemly and unshaven, whistling "Ain't Misbehavin'," in there stepped a DP maven, whom I knew to be a bore.

Not the slightest greeting gasped he; not my outstretched fingers grasped he; not the least raspberry rasped he as he perched above my door — Perched upon a bust of Elvis just above my door. Perched and sat, nothing more. "You're my SME!" I realized —

• Four principles can preserve sanity

• Proper control helps get the job done right

• 'I don't need buzzwords!'

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A COMPUTER
OVER
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|--|---|
| <input type="checkbox"/> 286-based systems | <input type="checkbox"/> UNIX-based systems |
| <input type="checkbox"/> 386™-based systems | <input type="checkbox"/> Laptops |
| <input type="checkbox"/> 386SX-based systems | <input type="checkbox"/> Other |

2. Are you interested in computer products for:

- A Home B Business

3. How many PCs do you (your company) plan to purchase in the next twelve months?

- | Timeframe | Quantity |
|--|----------|
| A <input type="checkbox"/> Less than 1 month | _____ |
| B <input type="checkbox"/> 1-3 months | _____ |
| C <input type="checkbox"/> 3-6 months | _____ |
| D <input type="checkbox"/> 6-12 months | _____ |
| E <input type="checkbox"/> More than 12 months | _____ |

4. How many PCs do you have installed now?

5. Are you a (select one):
- | | |
|---|---|
| A <input type="checkbox"/> End user | <input type="checkbox"/> Consultant |
| B <input type="checkbox"/> Reseller | <input type="checkbox"/> Corporate Purchaser |
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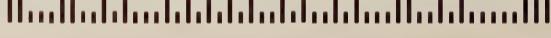
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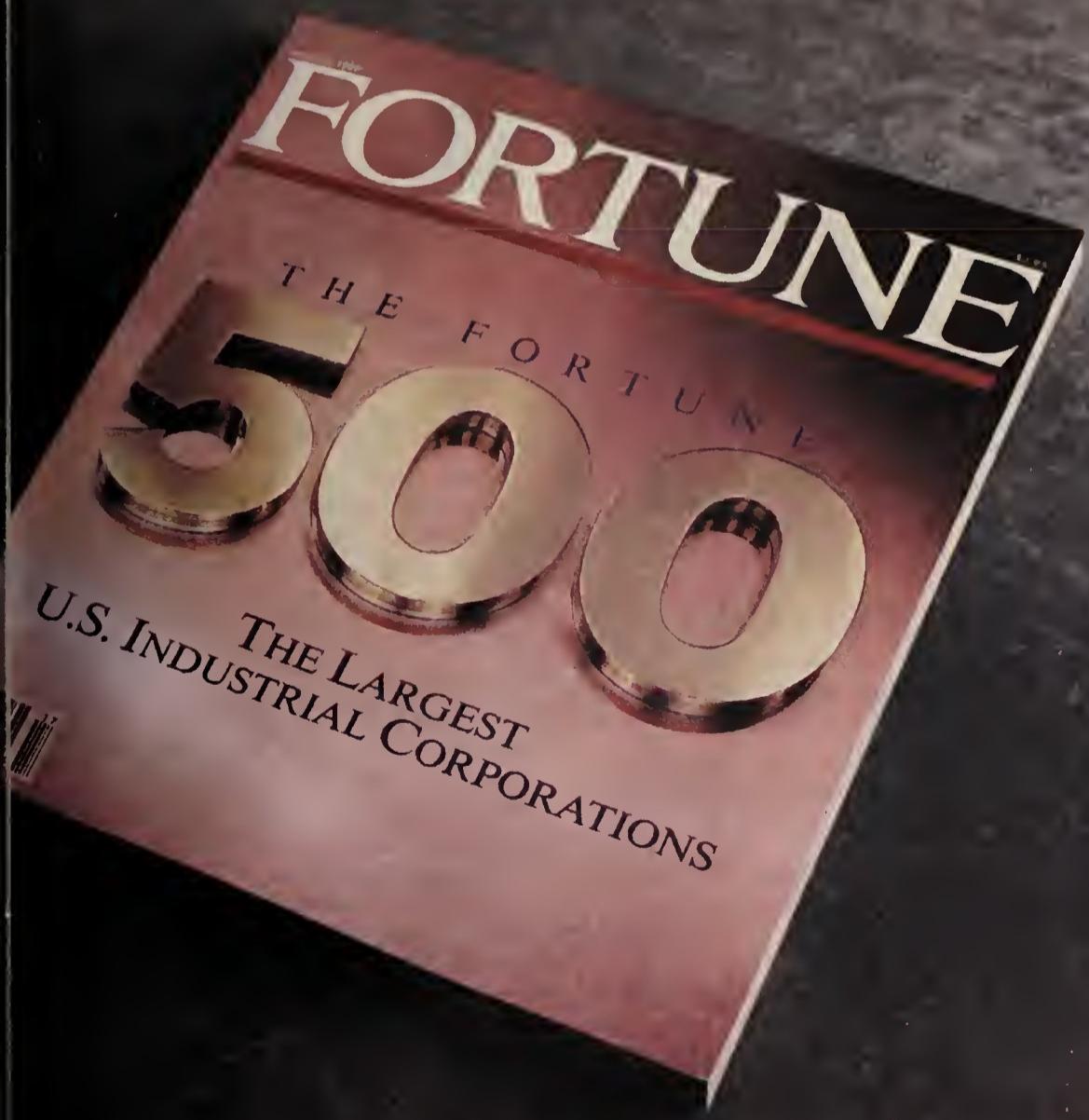
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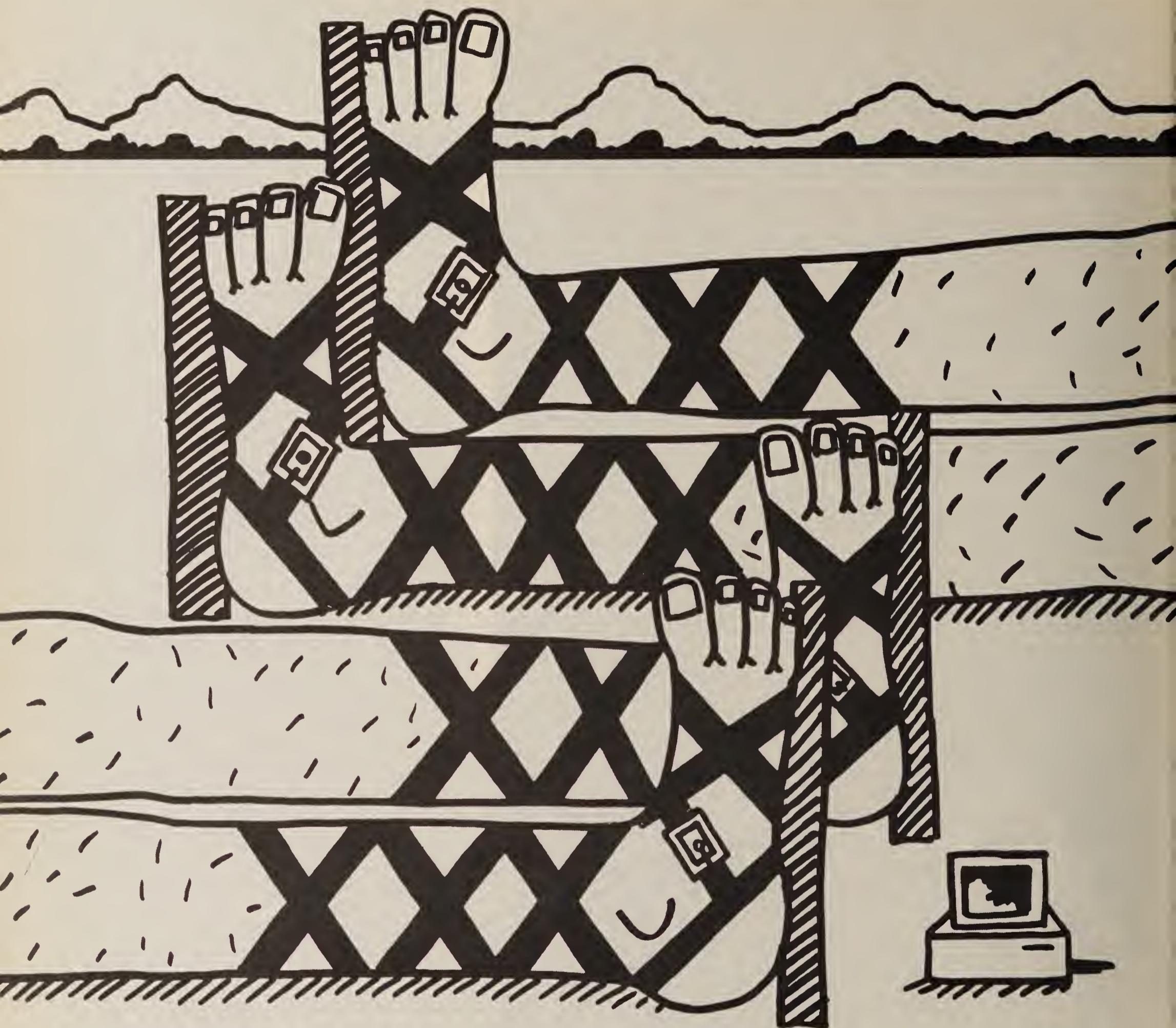
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not the image I'd idealized, as he sat with little steel eyes drilling through my cranial pan.

"Help me! Questions grow like cancers on this course for necromancers; I am stuck, and I need answers — give me answers, if you can! Cause my course to come across concisely, cursed little man!"

Quoth the Maven, "PC LAN."

There he sat, his big head leaning, face demented and demeaning, though his answer little meaning — scant illumination threw. Yet the Maven, sitting queerly on the algid bust, spoke merely.

That one word, as if it clearly uttered everything he knew. And when I said, "What!?" as evidence, I had no clue.

Quoth the Maven, "DB2."

"Fool!" I cried, "I don't need buzzwords! I don't need ambiguous words! Do not cause me to use cusswords till they carry you away! It is late, my brain is dimming; with frustration I am brimming;

Do not sit there acronyming till the acrid break of day! Don't restrain this training — give me answers, help me, earn your pay!"

Quoth the Maven, "SNA."

And the Maven, never quitting, still is sitting, STILL is sitting on my cursed course, emitting acronyms in his odd way.

And his eyes have all the sporting of a CRT that's shorting, and the light throws his cowering shadow on my bare "Out" tray. And my soul from out that shadow that lies floating in my way, shall be lifted — DOA!

— "The Maven," by Edgar Coran Pone.

Just having an expert's information is not enough. Most authors have at least one war story to tell about the time they were pitted against an egomaniacal, indifferent, undependable and generally unintelligible SMEs.

This brings us to the first of four principles regarding SMEs:

Principle No. 1: The expert should be involved in all aspects of the training process. In practice, the most common arrangement is still the one that makes a sweeping concession: "As long as the expert gives the information, we'll be okay." The main problem with this approach is that it is almost impossible to state in advance what constitutes sufficient information.

Thus, you end up with experts who deliver disorganized first drafts jammed with obscure jargon and circular reasoning — and who believe that they've completed their commission. For accurate, authoritative materials, therefore, the expert must be available before and after any text is written. He should expect to participate in every stage: design, development, quality control, internal presentation, sales and marketing, feedback and maintenance. The expert's participation should be spelled out clearly in the contract or project-design documents.

Principle No. 2: Use the expert in various ways. Many experts are not great writers, any more than they excel as course designers, salespeople or project administrators.

That is not to suggest that the expert's role needs to be limited, however. Specif-

ic expert contributions might include the following:

- **Helping to define the project scope.** You may be the one with the vision of the project, but the expert also can have something valuable to say. Only the expert knows the parameters of the subject well enough to help determine the size and scope of a project.
- **Developing an outline** and submitting it to the project team for review.
- **Refining the outline** as the team questions and critiques it. This process helps match the course structure with the audience level.
- **Answering ad hoc questions** and doing research to ensure that material is timely and accurate. This involves meeting with the development team once a week or so.
- **Assisting a course author** in preparing exercises. Specifically, the expert can help identify topics important enough to require reinforcement, shape questions of suitable scope and difficulty and anticipate wrong responses.
- **Validating material.** The author must accept criticism and go back to the drawing board each time revisions or changes are needed.
- **Meeting with sellers or promoters.** The goal is to answer questions and explain the significance of the material.

To sum up, the expert is not finished until the course is finished. He is not "off the hook" even then, because marketing and maintenance issues need to be dealt with.

Qualifications of an expert

*It is an ancient Rambler
Who stops by my PC
And fixes me with glittering eye.
"I had a chip," quoth he.
"Hold off! Unhand me, grey-beard loon!"*

*Ishriek, then chance to see
This addlepated nutcase is
My network SME.

I tear my hair, I beat my breast,
Yet cannot choose but hear,
And thus speaks on that ancient man
with tales of yesteryear.*

*Nose out of joint, making no point,
he drones his applesauce
Of how he loaded some new code
And blew out MS-DOS.*

*I'm s'posed to interview this fool,
But each contest I lose:
Chatter, chatter, everywhere
Nor any word to use.*

*He's through. "I'll tell you this, as well,
Ghost Writer, if you please:
He codeth well, who loveth well
Birds, beasts and SMEs."*

*I left like one who has been stunned,
whose reason's snatched away;
A sadder and a wiser man,
I called in sick the next day.*

— "The Ancient Networker," by Samuel Tailor Collaritch.

To repeat an earlier principle, "knowledge" is not enough. The best expert is not the arrogant know-it-all or the self-centered buffoon who believes in "documentation last." Instead, he is a person who shares your commitment to excellence, your sense of "mission" about the entire process — not as a teacher, perhaps, but as a lifelong student. Which leads us to our next point.

Principle No. 3: The expert should

have a passion for learning. This instinct makes someone willing to be a team player — to accept criticism, explain matters for the umpteenth time and put in extra hours. He genuinely enjoys the work and finds it stimulating. Communication skills may be lacking, but this person has the heart of a student — which, believe it or not, can be far more useful to you than the brain of a genius.

Look beyond the potential expert's professional credentials and experience. A less experienced person who is excited about the subject but still has things to learn is almost always better than a grizzled know-it-all.

Spotting a dud

"The wisdom of your advice is clear," you say. "But what if I'm stuck with an expert I didn't choose? I've given them plenty of chances, but I don't think the relationship is working." First, you need to be sure that a mis-fit exists. Don't be swayed by your prejudices or the job's pressures. Ask yourself the following questions:

- **Is the expert's information trustworthy?** Is it accurate and up-to-date? Does he or she take pains to double-check details and to research unresolved issues?
- **Is the expert's information comprehensive?** Does he have ongoing, direct contact with the subject matter in its natural habitat? Does he have access to all important information sources? Do you receive real answers to your questions?
- **Can your expert structure material logically?** You can fix poor pacing or thin explanations, but you need the expert to help establish the correct sequence for your purpose.
- **Is the expert available?** Does he return your calls and show up on time for meetings? An expert who causes you to wait and misses deadlines is a bottleneck.
- **Does your expert care about the outcome?** Is it a fairly high priority or just an occasional hobby?

A "no" answer to any of these five questions can indicate a problem. More than two negative answers means that you may have to share your concerns, your fears — and your evidence — with management. Ask them to work with you in enforcing the contract or, if necessary, in finding a replacement for the expert.

What if management's response is "Do the best you can"? Keep working with the current expert but hold him to a higher standard. Try a passive-aggressive approach: repeated questions to elicit additional proofs, or frequent phone calls to reduce response time. If possible, have another qualified colleague check the final product.

Working with an expert

STERNO: Can you tell me, Socrates, how to log on to TSO?

SOCRATES: My dear Sterno, I must confess that I do not know what TSO is, much less how to log on to it. But since the soul is immortal, all learning is simply a process of recollection, and so I will gladly join you in making an inquiry into the nature of TSO. In the first place, then, I ask you, is TSO required or optional?

STERNO: Well, since "TSO" stands for "Time Sharing Option," it appears it must be optional.

SOCRATES: Then one would expect to enter a particular command to invoke it, would one not?

STERNO: Certainly. It's the syntax of that command I wish to learn.

SOCRATES: Good. Now then, what is it

that you wish to do with TSO?

STERNO: Besides wrapping it around your neck? Why, to log on to it. I know it's some sort of log-on command.

SOCRATES: Very well, then, we have the command verb. Now, does the verb usually come at the beginning of a command or in some other position?

STERNO: The beginning.

SOCRATES: Then let us place it there. In the second place, let us inquire: Is it one or many that will be logging on?

STERNO: Just one, Socrates.

SOCRATES: Then presumably we must identify this one.

STERNO: Okay, so "logon userid"...

SOCRATES: There you have it, Sterno. Notice that you supplied the command yourself, out of your own head.

STERNO: Yes.

SOCRATES: You knew it, even though we said a moment ago that you did not know it.

STERNO: True.

SOCRATES: We conclude, then, that your soul was able to recollect this knowledge from the previous existence; indeed, that understanding of TSO is a gift to the soul from God.

— "Bozo," from *The Dialogues of Playdoh*.

The ideal expert would be someone like Socrates, meeting students at their own levels of knowledge and experience. Challenging them to meet particular objectives. Guiding them through a highly interactive, highly personalized exchange. Digressing, when necessary, to examine in detail their preconceptions and misconceptions. And, like Socrates, dying before royalties are collected (just kidding).

Unfortunately, most experts are more soporific than Socratic. Frequently, they lack the imagination to put themselves in the shoes of their students — to keep in mind what a novice does and does not know.

Your relationship with an expert contains a built-in paradox: You have to draw out the information by asking questions, and yet they must supply the structure.

This, then, brings us to the final principle:

Principle 4: Your success depends on your ability to think like your audience. Much of the work of communication is one-directional; you explain and illustrate your subject. Meetings with your expert, however, are an opportunity to shift to a two-way dialogue. In fact, the success of your project may depend on your ability to play the role of the target audience, anticipating probable questions and misunderstandings.

This role demands as much of you as it does of the expert. It forces you to resist the temptation to regard your outline as carved in stone: rather, relinquishing a measure of control, you must investigate the grey areas that inevitably rise like pockets of mist along the way. Be relentless — the expert may not realize that something is missing and may try to appease you with half-answers. Keep at it until the point is really clear.

By following these suggestions, your anger, frustration and feelings of inadequacy can be transformed into moments of real excitement. The thrill comes from functioning as a team. When the cooperative process works, understanding merges with expression, beauty embraces truth, Godzilla meets Wordsworth and the end result seems greater than the sum of its parts. Adieu. •

Training wheels in motion

'Strategic training' can move your organization toward its goals

BY MARK DUNCAN

Mention "productivity improvement" to the average information systems person, and the conversation likely will turn to automated design tools, code generators, iterative life cycles, prototyping, computer-aided software engineering and a myriad of other vogue technological solutions.

In the same way, mention "competitive advantage" or "strategic advantage," and you'll get another set of pat answers: expert systems, local-area networks, cooperative and distributed processing and creative customer/supplier relationships.

Training is rarely mentioned as a way to improve systems development productivity or as a way to boost an organization's competitive advantage. Pity. Training is a viable way of accomplishing both these objectives — and may be the cheapest alternative.

As defined here, IS training does not refer to routine instruction about how to

Duncan is a quality-assurance consultant based in Dallas.

use a product or other everyday technical skills. Strategic training means an intense, honest scrutiny of the IS department's collective repertoire of skills. This inventory produces an objective assessment of how close to 100% effectiveness the staff really is.

Once you have derived an effectiveness metric, a plan to annihilate any deficiencies can be prepared. The goal is to bring as many staff members as possible to 100% competency in several key areas, including software tool usage, methodology comprehension and business acumen. The overall objective is for the various parts of the IS department to work in concert and with precision.

Strategic IS training begins by examining an organization's short-term and long-range plans. Matching these projects and the environment with available skills will reveal any gaps that must be remedied by specific, appropriate and timely training. As long-range plans change, so must the training curriculum.

If training vendors are used, they must be apprised of the company's goals and customize courses accordingly. (Most vendors will do this quite willingly.)

A secondary goal from the firm's per-

spective is to "train a trainer." This involves identifying individuals who, once trained, can apply their knowledge and teach it effectively to others, minimizing subsequent training costs.

Seeing the light

Focusing on a "training solution" rather than a "technology solution" may have another benefit: It can bring to light the inadequacies or deficiencies of a training function. Organizations can embark on a technological change — wisely acknowledge that training is an essential element of that change — only to find themselves ill-equipped to establish and administer the required training. Dollar losses can be great from software tools that nobody is trained to use or from training that is off-target and untimely.

A technology solution — or even a massive technological revolution — may actually be critical to an organization's continued viability. But even in such cases, training is an essential accompaniment to change.

Far better for an organization is to have an established training function. A critical success factor for technological change is "organizational readiness." A

training function that can kick into gear on demand is key to that readiness.

An example: Company A unwittingly found itself in a race with longtime rival Company B for a huge new market. Richer and larger Company B began deploying its wealth in technology solutions. Company A could not compete on that basis and began to look for alternatives.

Brainstorming revealed that a quickly built "throwaway" system was required. Company A had an unused fourth-generation language (4GL), and a staff skills search uncovered one expert and one near-expert user. Consultation verified that the 4GL was ideal but that more programmers would be needed. The expert and almost-expert were commissioned to select and intensively train a team of programmers in the 4GL using classroom and on-the-job training. Though the resulting system was not of the quality of a system developed by more experienced programmers, it still gave Company A a commanding lead over Company B.

In this case, training extended the skills of several staff members by teaching them fluency in a new language and cut the costs for external training consultants. The example shows that a company

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should not overlook its existing resources when searching for automation solutions to business problems.

Training figures prominently in the landmark MIT study "Management in the 1990s." This five-year, \$5 million research study focused on managing information technology. A summary of the report shows that implementing changes depends in part on knowing how to perform effectively in the new environment.

Training as a strategic activity was also underscored in the Malcolm Baldrige National Quality Improvement Act of 1987, which was designed to promote quality awareness, recognize quality achievements of U.S. firms and publicize successful quality strategies. Winners must show a record of five years of sus-

tained, organizationwide improvement.

Among the evaluation criteria — which include leadership, information and analysis, strategic quality planning, human resource utilization, quality assurance of products and services, quality results and customer satisfaction — is a subcategory called "Quality Education and Training."

Investing in the future

One final example illustrates the significance of training. McDonnell-Douglas Computer Systems Co.'s software and consulting organization recently published a booklet called "Nine Proven Methods to Increase System Developer Productivity." A key recommendation is "invest in training."

It is evident from these examples and others that training must be a key element of any organization's strategy for success. Vendors seek to bedazzle IS with technology. For its part, IS yearns for the new, improved, the faster, the better. Both behaviors are acceptable and necessary and push forward the boundaries of technology. But success hinges on the intelligent use of technology.

Ultimately, technology and human skills are inseparable. Paul S. Colahan, president of Walker Associates, Inc., a Boston-based consultancy specializing in the health care industry, says, "Doing the job properly while continuing to expand the client list forces us to rely on two things: people and technology."

Colahan advocates using this formula:

"First, hire quality people and train them to be expert in what they do. Show them why their job is relevant, and we help them understand why they should take pride in them. . . . With automation, we gain a tremendous competitive advantage. But our dialogue must remain true to successfully marrying people and technology."

It makes good sense to explore new technology, but that good sense must extend to include the training necessary to master that technology. If it does not, many a new software tool and method will suffer early failure. Organizations that ignore training as a key part of their strategy will discover that vogue technological solutions often turn out to be simply rogue technological solutions. •

10 steps

(1) Establish a formal training policy stating required amount of annual training for various job levels. Examples: 2% of average work year, entry-level staff will receive 80 hours annually, etc.

(2) Create a formal mechanism for requesting normal and exceptional training. Make sure staff knows the procedure and is encouraged to take advantage of opportunities.

(3) Conduct a regular needs analysis, perhaps annually. Needs should be based on long- and short-range organizational plans.

(4) Formulate training curricula annually. Distinguish between basic or core training and advanced or specialist training.

(5) Shoot for 100% efficiency in tools and techniques. Extend or repeat training to reach this target.

(6) Give staffers opportunities to apply new skills. The goal is to complement theoretical knowledge with substantial hands-on experience.

(7) Practice a "train the trainer" philosophy. Choose training candidates who not only can learn well but who can teach others.

(8) Establish solid relationships with training vendors. Seek out those especially willing to customize courses to suit your organization's policy and strategy.

(9) Educate staffers in the business of the organization. Besides complementing their technical skills, making them more business savvy will help illustrate their contributions to corporate success.

(10) Maintain an up-to-date skills inventory. This can provide quick identification of available and needed skills, reveal cross-training needs and reflect your overall training direction.

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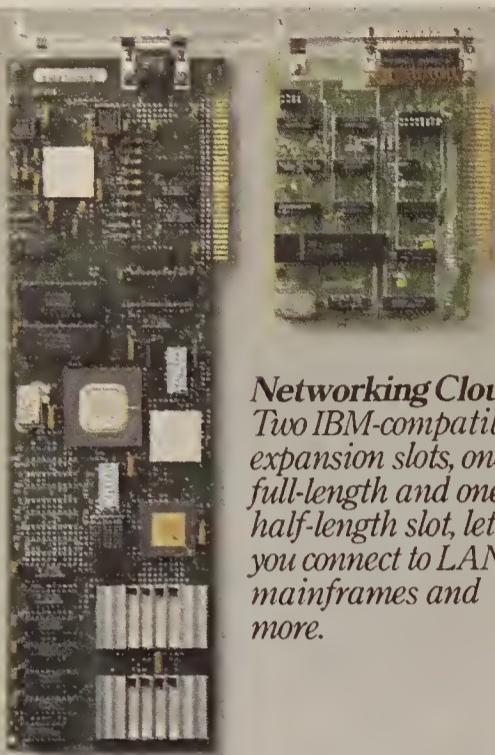
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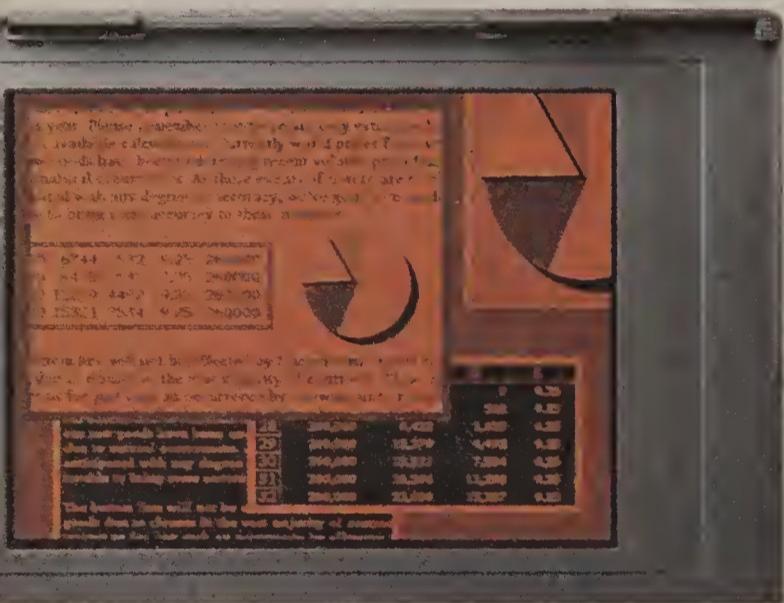
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In a recent magazine article that makes a case for future Japanese computer dominance, IBM President Jack Kuehler is quoted as saying, "We have the people who can compete — if we can lubricate the process."

The article goes on to paraphrase Kuehler: "All computer makers need are measures that will give innovators in the U.S. the same chance as their Japanese rivals. A couple of tax credits. A little less worry over antitrust. A bit of judicious industrial policy."

In light of what it is now doing to the third-party market, is IBM talking out of both sides of its mouth? IBM is presently at war with all segments of the third-party market as well as its manufacturing competitors.

To be sure, IBM's main thrust is aimed at keeping its manufacturing competition from grabbing market shares. However, in IBM's eyes, the third-party market has been like an infestation of fleas, attacking all parts of the abundant host.

There are two kinds of such "pests" — dealer/lessors and maintainers. When IBM decided

Continued on page 118

Continued on page 118

BY ELLIS BOOKER
CW STAFF

DALLAS — It took 29 years, but the Japanese government's patent office finally acknowledged Texas Instruments, Inc.'s rights to the integrated circuit.

The patent covers virtually all production and use of ICs in Japan — the world's leading producer and consumer of ICs and semiconductors — and could mean billions of dollars in royalty payments to TI over the next 12 years, according to analysts.

TI officials, however, would not speculate on the worth of the patent award except to say it

would be a significant, ongoing source of royalty income. Several weeks ago, TI officials confirmed that the Japanese Patent Office had issued the award on Oct. 30.

TI originally applied for the patent in February 1960, two years after TI engineer Jack Kilby first demonstrated an IC.

TI's U.S. patent for ICs was granted in 1964 and expired in 1981. Intel Corp. co-founder Robert N. Noyce, now chairman of the Sematech consortium, is credited with having invented the method of interconnecting devices on an IC.

Effective immediately, the

long-awaited Japanese patent runs through Nov. 27, 2001. Analysts said the Japanese Patent Office takes, on average, five to seven years to process a claim and that the length of delay in the TI award was highly unusual.

Royalty licenses are based on a percentage of sales — usually less than 1%, according to Paine Webber, Inc. Vice-President John Lazlo. Assuming a 0.5% to 1.5% royalty rate, Lazlo calcu-

lated that TI could see between \$2.5 billion and \$7.5 billion over the patent's 12-year term. Paine Webber estimated that Japanese makers will account for \$15 billion of the \$40 billion worldwide IC market this year.

However, the Japanese royalties, which are not retroactive, may be cold comfort to TI, which recently announced it would take a \$55 million pretax charge against earnings and lay off 1,500 people because of sliding dynamic random-access memory chip prices [CW, Nov. 27].

Continued on page 116

Key figure stepping away from Apple core

BY JAMES DALY
CW STAFF

Delbert Yocam made good on a year-old pledge to retire from Apple Computer, Inc. on the 10th anniversary of the date on which he first stepped through its doors, leaving the firm he helped nurture from a scrappy start-up to one of the computer industry's central figures.

Yocam held several key positions during his tenure at the Cupertino, Calif.-based firm: general manager of the Apple II division, executive vice-president in charge of operations, chief operating officer and head of the education division.

His final position as point man for Apple's Pacific division was one of his most successful roles. Under Yocam's aegis, the region became one of the company's fastest growing revenue producers and now accounts for 12% of Apple's total sales, he said.

The 45-year-old Yocam has not decided what he will do next, although he said he has received offers to write a book about his years at Apple as well as several invitations to head high-tech ventures.

Yocam joined Apple in 1979 after a series of jobs at ITT Corp., Ford Motor Co. and Fairchild Camera and Instrument Corp.

with a waste problem. It not only takes the computers — themselves a solid waste problem — but also recycles the hazardous sludge that is a byproduct of manufacturing. Like the boxes, the sludge contains both precious metals and toxics.

Computer companies leverage their waste, Descamps said. They expect a return on their garbage. "The companies normally retain ownership of materials," he said.

Micromet determines the materials' value after initial processing and fixes the price of the metals on the spot market. Then Micromet will buy the computer from customers.

Computer firms get cash from their trash — between \$10 and \$15 per pound, Descamps estimated.

Continued on page 114



Micro Metallics'
Descamps

Mining gold from computers

BY J. A. SAVAGE
CW STAFF

SAN JOSE, Calif. — If the desire to smash your computer has ever gotten the better of you, consider Tim Descamps — he gets to smash them every day.

Old boxes, bad batches of silicon chips and obsolete circuit boards are all fodder for Descamps' operation — turning the finished product back into its essential elements of gold, silver, copper and plastic.

Descamps, president of Micro Metallics Corp., revealed a safe piled with gold and silver bars, the most profitable part of the business. "It's an above-ground mine," he said.

Located in the Silicon Valley, Micro Metallics — or Micromet, as it is more commonly known — feeds off computer companies

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Planned defense cuts stun industry

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — U.S. Defense Secretary Richard B. Cheney's early November call for \$180 billion in defense budget cuts over six years sent shock waves that continue to ripple through the defense electronics and computer industries.

While precise budget cuts have not been set, spending on new U.S. Department of Defense (DOD) information systems and high-tech projects at the Defense Advanced Research Projects Agency (DARPA) could be hard hit, analysts said.

DARPA's funding for Sematech, a chip manufacturing consortium, and grants for high-definition television (HDTV) projects are already vulnerable to budget-cutting because of opposition from the White House Office of Management and Budget, according to Alton Marsh, founder of "Advanced Military Computing," a newsletter based in Arlington, Va.

Budget director Richard G. Darman reportedly opposes financial aid for private ventures on the grounds that it smacks of the kind of "industrial policy" that President Bush ran against in the 1988 election campaign.

However, the Sematech and HDTV projects could be saved by Congress,

where they are very popular. Sen. Albert Gore Jr. (D-Tenn.) said that cutting those programs would encourage "the complete and irrevocable demise of the American consumer electronics industry."

Cheney asked the military services to come up with \$180 billion in cuts in advanced weapon systems and other areas because of the U.S. budget deficit and the diminished threat of war in Europe. Defense stocks plummeted 5% to 10% after Cheney's announcement, and analysts predicted a new round of mergers, acquisitions and layoffs in the defense industry.

Meanwhile, troubled defense contractors such as Lockheed Corp. and General Dynamics Corp. are expected to accelerate their forays into systems integration in the civilian side of government. "Those companies see the systems integration arena as a way to offset some of the cutbacks on the weapons side, but it's not clear their hopes are going to be realized," said Warren H. Suss, a federal market consultant in Jenkintown, Pa.

The defense cuts may be a mixed bag for IS managers in the DOD. Proposals for new and upgraded information systems will "come under the microscope" and may be delayed, Suss said. However, there may be greater demand for IS, justified on grounds that they streamline logistics and support functions and reduce the need for manpower, he added.



Miner

CONTINUED FROM PAGE 113

And Micromet will recycle just about anything. Recently, the firm's three-acre lot contained film from circuit board layouts, which contain silver; the plastic cases from old personal computers; drums of pin connectors, and more. Most of the junk is reduced to a grimy dust, which is then raked for metals.

Circuit boards are pulverized into corn-flake-size pieces and then baked and smelted into crude copper bars. Despite the use of vats of boiling cyanide in one process that allows the gold to sink to the bottom, Descamps claims he has the edge in environmental quality with a new scrubber on the firm's incinerator.

"The air that comes out is cleaner than the air that goes in," Descamps said.

However, the downturn in the electronics industry spells hard times for Micromet. To cut costs, companies are using less gold in their components, and manu-

facturers have become more efficient about it, according to Descamps.

To keep its edge in the scrap market, which Descamps estimates at 40%, Micromet meets Silicon Valley on its terms. The lobby is upscale, full of fancy furniture and art, albeit art based on silicon chips — not the normal scrap heap associated with such a business. Salesmen wear suits and offer glossy brochures.

"Computer companies are facing more



Descamps holds good-as-gold circuit boards

costly investments in environmental and safety issues. We're betting that as the process becomes more expensive, we'll be the only [salvager] left," Descamps said.

Micromet and the golden PC

If Micromet's Tim Descamps despairs over the possibility that hard times are tempting computer manufacturers to turn to baser basic components, he might get a rush out of knowing that, at least at V.I.P.C., there's still gold in them thar PCs.

The Hayward, Calif.-based vendor offers users a truly gilt-edged proposition: a customized personal computer, built on Intel Corp.'s powerful 80486

chip, running at 25 MHz and plated in 24-carat gold.

Loaded with an array of superpower features — it comes with two hard disk drives, a hardware disk cache for speedy hard-drive access and one each of the reigning favorite floppy drives — and ruggedized according to U.S. government standards, the auric offering can be yours for a mere \$49,995.

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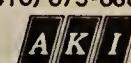
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High times ahead for Unix in Taiwan

BY LORI VALIGRA
IDG NEWS SERVICE

TAIPEI, Taiwan — Unix is about to enter a boom period in Taiwan, sparked by the impending release of specifications for a Chinese Unix operating environment that includes an operating system, workstation and networking standard that could eventually create an export market as large as the current outflow of IBM clones from the island.

Taiwan's Institute for Information Industry (III), which is partially government sponsored, plans to release the specifications for the standard next month, although they were originally due Oct. 1. The association's so-called Software Engineering Environment Development (SEED) project is a four-year cooperative effort by III, local industry and university research groups to create a common software development environment to help establish the infrastructure for Taiwan's software industry.

The effort can be likened to Japan's Sigma project, which is aimed at relieving that country's critical shortage of software programmers. Both projects are based on the Unix operating system. The SEED project, which began in July 1988, is also working on a Chinese OS/2 standard.

According to Vera Cheng, deputy director of III's systems engineering division and head of the project, III is still ne-

gotiating with the government over pricing for the source code and hardware specifications.

To date, 20 engineers from 20 local vendors are participating in the project, which has also drawn outside technical expertise from the Open Software Foundation, Unix International and X/Open Unix standards groups. The key focus for making a Chinese Unix operating system is support for up to 4-byte characters. The standard will also support an X Window System interface, Open Look and OSF Motif. It is based on Unix System V, Release 3.2 and uses AT&T's multinational language-support definitions.

In addition, the group is devising a Unix workstation standard, initially based on the Intel Corp. 80386 and 80486 processors. It will eventually include Sun Microsystems, Inc.'s Scalable Processor Architecture reduced-instruction set computing technology.

According to Cheng, the project will enable local vendors, whose margins have eroded to almost zero in the PC-compatible market in Taiwan, to add software value to their systems for both export and domestic sales. Cheng said she believes that Unix system exports could equal those of PC clones in approximately two years.

In the home market, national products such as a residential information system, a type of computerized census system, will also stimulate demand for Unix sys-

tems. The government has two other programs — one to automate hospitals and another for telephone directory assistance — that are likely to use Unix systems as well.

Nurturing a SEED

The SEED plan calls for building the SEED workstation, software and network prototypes by the end of this year, testing and promoting them next year, and enhancing them and marketing them in 1991. The total budget for SEED, including the OS/2 portion, is \$78.84 million

during the four years.

All major Unix vendors in Taiwan, including U.S.-based suppliers, are waiting for the SEED standard to be released because that gives them the chance to bid on large government contracts. To date, only English-language Unix operating systems have been available, although Chinese programs can run on them using international character sets in the English system program. The availability of SEED specifications is expected to get the Unix market off to a running start, market participants here said.

Patent

CONTINUED FROM PAGE 113

While downplaying the potential financial windfall, TI welcomed the patent award as a victory for intellectual property rights.

"We believe the long-term trend supporting enforcement of intellectual property rights is now in place," spokesman Stan Victor said.

Many licenses

TI currently has licensing agreements with many Japanese technology concerns, according to Victor, and the agreements are not scheduled to expire until the end of next year.

"The value of our patent portfolio will

be weighed against the value of theirs and we'll come up with agreements on whether royalties will be paid," he explained.

TI has already fought hard to get royalties from Japanese chip makers selling wares in the U.S. Three years ago, it successfully sued several Japanese chip makers for unlawfully infringing on its IC patents in the U.S.

TI said it has netted \$440 million to date in royalties as a result of the suits, including \$125 million in the first three quarters of this year.

The Japanese companies named in TI's infringement suits were NEC Corp., Toshiba Corp., Fujitsu, Ltd., Oki Electric, Matsushita Electric Industrial, Sharp Corp., Hitachi Ltd., and Mitsubishi Electric. Korea's Samsung Electronics was also named.

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IN BRIEF

Vanderslice resurfaces

Thomas A. Vanderslice, former chief executive officer of the former **Apollo Computer, Inc.** — since last spring, a division of Hewlett-Packard Co. — last week turned up at the helm of struggling Bedford, Mass.-based defense contractor **M/A-Com, Inc.**, whose last CEO, Thomas Burke, was killed in an auto accident earlier this fall. According to a prepared statement, M/A-Com is counting on Vanderslice's "demonstrated . . . ability to identify new market opportunities and grow existing businesses." Analysts, on the other hand, recalled Vanderslice as the CEO who let Apollo's market lead slip through his fingers.

Heightened recognition

Within hours of its late November acquittal on all charges of conspiracy to obtain U.S. Postal Service contracts for scanning equipment, **Recognition Equipment, Inc.** announced the formation of an independent business unit to provide mail processing systems to commercial firms and postal services.

The Softselling of Microamerica

Microcomputer products distributor **Microamerica, Inc.** and a subsidiary of competitor **Softsel Computer Products, Inc.** last week proposed to merge. Softsel President and CEO Michael Pickett is slated to bear both titles at the combined company, with Microamerica Chairman and CEO Gordon Hoffstein as chief operating officer.

And now, Andersen Consulting

With several joint projects already in the works and a projected \$10 million worth of workstation sales on the horizon, **Andersen Consulting** last week signed on to re-market **Sun Microsystems, Inc.**'s entire line of computers and software. The Chicago-based consulting firm's newly created unit, dubbed New Age Systems Group, will handle Sun-centered commercial integration projects.

Twice as safe

Comdisco Disaster Recovery Services, Inc. and UK-based disaster recovery company **Istel Failsafe Ltd.** have joined forces to launch Failsafe ROC Ltd. to provide disaster recovery services to more than 550 UK customers. Istel will hold a controlling interest in the joint venture, which both partners said they believe will be a stepping stone to pan-European disaster-recovery services.

A call for U.S.-Soviet tech openness

Soviet computer expert proposes give-and-take between East and West computer industries

MOSCOW — Eugene N. Velikhov is vice-president of the Academy of Sciences of the USSR, a physician and a permanent member of the Soviet summit delegation. He is responsible for computerization policy in the Soviet Union and is recognized internationally as the best-known authority on the Soviet computer industry. He was interviewed recently in Moscow by PC World USSR.

What is your view of the present situation in Soviet information technology? Western experts consider that we have been lagging in this field for five to 10 years because of the previous monopoly situation and orientation toward defense priorities.

We are lagging behind in electronics for several reasons. In the West, computers have been developed not only at big firms like IBM but from the bottom as well. Small companies that were ready to take risks contributed their ideas and provided for technological breakthroughs. For example, personal computers were developed despite the then-prevailing view of some leading firms and experts.

The Informatic and Computer Science branch of the Soviet Academy of Sciences was established anew in 1983, as previously all computer and information technology research institutions had been transferred from the Academy of Sciences to economize. This was a big mistake.

The scientific and technological perspective and infrastructure were neglected. We established institutions that produce computers, but we lack the equipment manufacturing base.

Before we shifted focus to IBM clones, we had a rather efficient computer, the BESM-6. This was not bad, but it requires a certain microelectronics base which was

yet to be developed.

Secondly, we should buy licenses rather than engage in R&D. To do otherwise means throwing away three to five years. The greedy pay twice.

How would you describe the situation in producing and buying PCs?

Our own computer production is an iceberg. On the top is the assembly. On the bottom are hardware, components and material. We begin to erect the iceberg from the top. We are producing obsolete personal computers because of very weak basic electronic components and outdated peripherals.

However, we are capable of producing individual high-tech units. Today the Academy of Sciences produces PCs that were highly regarded at the Hannover Faire. The volume will be some several thousands. Our base for success is eight centers that have been set up in the Soviet Academy of Sciences.

We started from scratch, from the basics. Nowadays, we are producing VLSI [very large-scale integration], both hardware- and application-specific.

Many Western scientists and experts are very interested in our software. How can you explain this?

If we use our own components that are two generations behind and develop our own computer, which is already three generations behind, then software for the computer would be three or four generations behind, save for immense effort.

However, we do have reliable computers of a top level and produce about 100 per month. We could have a chance of moving to the world market in the area of the program software with application software.

And what about the most powerful computers?

We are lagging seriously behind the West in this area. But this year we'll make computers that will be close to one billion operations per second in capacity. I refer to the Elbrus, which will use assembly line processes.

What, in your opinion, should the West send to us, and how has the embargo affected this field?

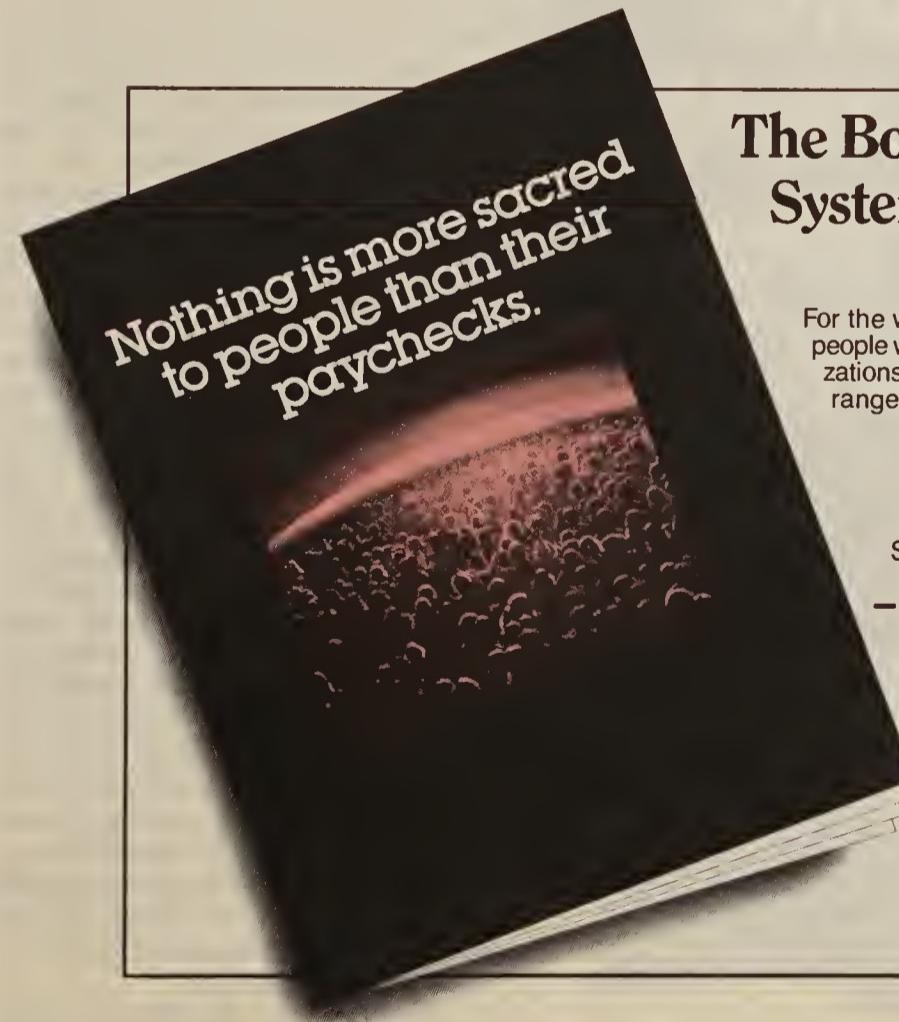
The impact of the Western embargo is twofold. On the one hand, it has accelerated our development and, on the other hand, it has impeded it. The West has to be interested in cooperation with us. We would like to jointly develop hardware-based submicron technology and have a free exchange of chips. We can provide program software, algorithms and mathematical models. What we need is greater openness of the West and lifting of restrictions.

What's your opinion of artificial intelligence?

We have certain practical results in application expert systems [in areas such as] science and medicine. Further development has been hampered by the same old factor of obsolescence. The second aspect concerns philosophy — that is, research into the process of thought computerization.

Are there any prospects in the field of patent rights?

Soon we will have a new law on inventions. In my view, its last version is quite acceptable, as the inventor has all rights, just as they do in the U.S., Japan and other countries. We need to have a law regarding program software, as at present it is protected not by a patent but by copyrights.



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CONTINUED FROM PAGE 113

ed to get out of the rental business, it needed the lessors to provide the financing alternatives to end users. This triggered an explosion of third-party dealers and lessors who would gobble up machines as fast as they could be installed.

A few of these entrepreneurs realized that because IBM's maintenance prices were so artificially high in cost and the System/34, 36 and 38 equipment so relatively cheap to maintain, they could offer users a 15% discount. The user would then call IBM for service, which would be billed at time and materials rates and paid for by the vendor, since IBM operated on a "first-call" basis and the level of service did not suffer.

These vendors soon saw that they could make even more money using their own parts and people. By then, many of the accounts were comfortable with the reliability of the maintenance vendor, so it was only necessary to offer the alternative of complete third-party service with a 30% discount off IBM's prices.

The success of this practice tended to "legitimize" third-party maintenance and aided the traditional mainframe maintainers. Moreover, lessors began to formulate tie-in agreements with maintenance companies. Some even started their own operations.

It didn't take long for IBM to react to the loss of account control and a very lucrative revenue base. IBM introduced

aggressive — some say predatory — maintenance and pricing policies and unleashed IBM Credit Corp. (ICC).

IBM also moved to centralize its handling of third-party accounts. Traditionally, IBM serviced third-party vendors out of its regular branch offices, with consequent continuity of personnel. When it created its Centralized Response Office, it was able to easily observe and control the entire third-party market. IBM could also now create inefficiencies for the third parties at will, several of which are always in the mill.

Consolidating allowed IBM to accurately measure the cost of servicing so many individual companies, when the vast dollar amount of purchases were coming from relatively few. Could it be that IBM decided it would rather deal with a few chiefs than a lot of Indians?

There is agreement among those in the third-party market that IBM would love to cripple maintenance firms. This would have the effect of allowing IBM to affect much of the older equipment now in productive use and, eventually, to raise maintenance prices, which in many cases have become unrealistically low.

The same is true of some of the bids that IBM has made through ICC.

IBM is aggressively fighting the installation of its own equipment in third-party hands, for the first time using cost-cutting as its sole weapon. It has hurt the third-party business immensely and has spurred consolidations and diversification. How long before some of these dealers start throwing in the towel out of

frustration and disgust? And doesn't this all point to a significant reduction of competition?

Now come the Japanese — the methodical, patient, long-term investment Japanese. How long will it take them to realize that there are almost 1,000 IBM dealer/lessors (plus hundreds of others who deal in the other brands) and over 300 firms that service and maintain such equipment and mobilize this force?

Most of us in the third-party business are fiscal conservatives, although we are willing to take risks to make money. And most of us have a patriotic streak running through us. We are concerned with the selling of America and the trade imbalance, and we want to see U.S. industry stay strong and competitive.

However, we are not fools. We drive mostly foreign cars because we know that they are better than what the U.S. produces. If we see a better business deal from a foreign source, we will jump on it enthusiastically if it means our survival.

IBM always likes to have it both

ways. It wanted to mass market the PC while maintaining absolute distribution control. Impossible! IBM created the gray market and then spun its wheels trying to eliminate it.

They created industry "partners" from the software industry, along with conditions that made it almost impossible to adhere to the rules, yet ignored the established dealers who know how to move iron better than any software developer. (Isn't it curious that Comdisco does not qualify to be an IR?)

Now, IBM wants to limit the scope and impact of the third-party market — the very weapon that enabled it to keep its market share in the first place — and it expects these entrepreneurs to lay down and play dead while it mounts a full-scale attack on Japanese computers.

It doesn't seem to make sense, does it?

Cohen is executive director and a founder of the American Society of Computer Dealers and a founder of the Computer Dealers Association.

IBM readies two-pronged plan to ensure DRAM supply

ANALYSIS

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — Is IBM hedging its bets as it tries to reinstate dynamic random-access memory (DRAM) chip technology in the U.S.? A growing number of vendors and industry analysts think so.

IBM appears to have adopted a two-pronged strategy to ensure that it will have a steady supply of DRAM chips. It plans to license its 4M-bit DRAM chip technology to U.S. Memories, Inc., a research consortium with seven members, including Digital Equipment Corp., Hewlett-Packard Co., Intel Corp. and National Semiconductor Corp. But it is hedging that bet by licensing the same technology to other private firms that plan to optimize proprietary IBM chip technology.

"One [agreement] does not exclude the other," an IBM spokesman said recently. "The goal is to ensure that there are sources of supply for components in the U.S. — in this case, the 4M-bit DRAM." Last month, IBM announced a first-of-its-kind agreement to license its 4M-bit DRAM chip technology to Micron Technology, a \$300 million Boise, Idaho, chip maker. But the Micron deal has not prevented IBM from talking to \$200 million Cypress Semiconductor Corp. in San Jose, Calif., about doing the same thing.

When will this flurry of licensing activity stop? IBM said it will not go much further — for now. Michael Attardo, president of IBM's General Technology Division, recently noted that the Micron deal was the "first-ever" licensing agreement on IBM chip technology. So far, he said, IBM has only committed to supporting Micron and U.S. Memories. Cypress is considering the terms and conditions of a similar arrangement proposed by IBM last month. Other than these, Attardo said, "There are no other efforts to license out 4M-bit DRAMs."

Attardo revealed that IBM's talks with its potential licensees have extended to

future DRAM generations. "We're currently piloting the 16M-bit DRAM, and we have 64M-bit DRAM under development," Attardo said. "Those are the next two generations. We'd like to see a strong domestic supplier of DRAMs, along with a strong semiconductor infrastructure, and this [licensing effort] is one of the ways we see of generating it."

IBM's dual approach — to get chip projects going in both the private sector and through an industry consortium — is the company's way of ensuring a steady supply of chips for its own high-end mainframes, analysts said. Now that Japanese semiconductor manufacturers are the only source of commercial DRAMs other than IBM, the computer giant is worried. Just two days after the Micron agreement was announced on Nov. 10, Cypress Chief Executive Officer T. J. Rodgers met with Attardo. Rodgers, who requested the meeting, said he wanted to convince IBM that small, entrepreneurial firms like Cypress could better optimize IBM's technology than government-subsidized consortiums like U.S. Memories. He made that point again in a speech at last month's Wescon semiconductor show here.

"If they did it right, IBM could get U.S. Memories and three or four companies going [on DRAM technology]," Rodgers said. "You could derail the Japanese train for quite a while, and the Japanese would have to retool to meet our specifications."

But there may be a downside to IBM's newfound chip-licensing activity. In propelling up the U.S. DRAM industry, IBM may be "wrapping itself in the American flag," said Bob Djurdjevic, president of Annex Research in Phoenix.

"The government loves it, because they need someone to be portrayed as a white knight that's going to save the U.S. computer industry," he said. "But, while IBM is beating its chest here [about American patriotism], it's still getting more than 50% of its sales overseas. For any multinational company to be so partisan in any market is, I would think, counter-strategic."

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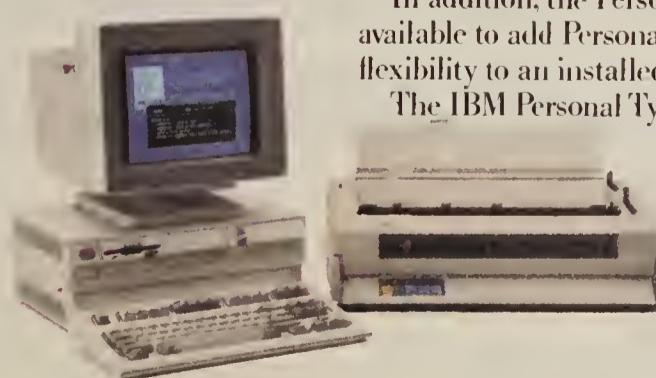
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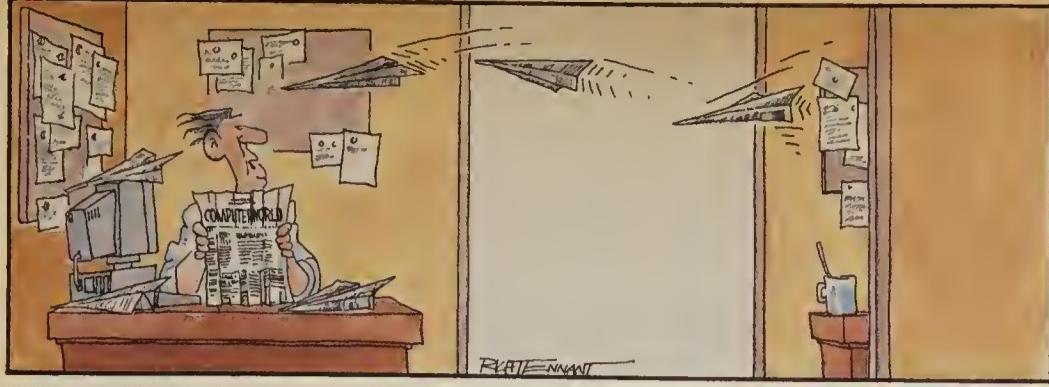
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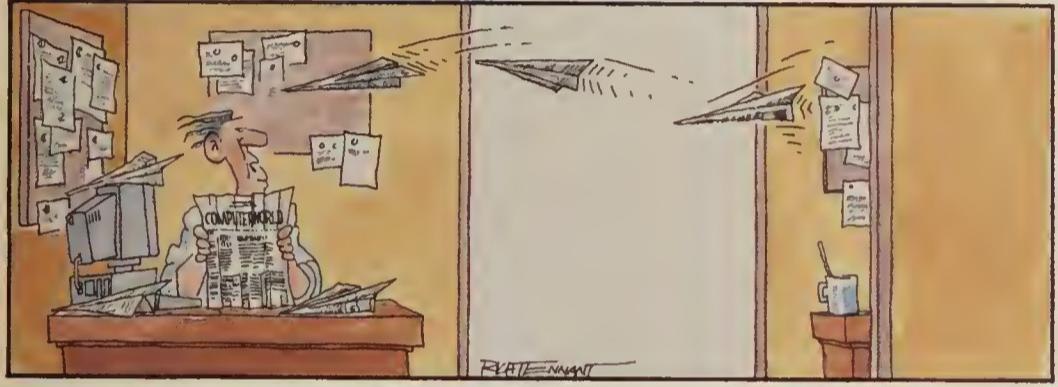
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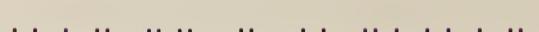
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COMPUTER CAREERS

What's a job offer worth?

It pays to tally up bonuses — and costs — from benefits and perquisites

BY JANET RUHL
SPECIAL TO CW

The salary quoted as part of an information systems job offer does not always provide a true picture of how much you would really earn. In fact, two jobs that offer the same nominal salary may differ by as much as \$6,000 per year in what actually ends up in your pocket.

One reason for this situation is that a company's benefits plan can affect your real earnings significantly. If you have not changed jobs in the past three years, you may be unprepared for the serious erosion in the quality of benefits that has taken place at many large employers. In response to rising insurance costs, many firms now require that the employee make a hefty cash contribution for benefits that the firm used to pay itself.

Family health insurance has become particularly expensive; employee contributions have been increasing by as much as 50% per year. In 1990, for example, employees at one large insurance company who choose the full family plan will lose more than \$1,600 from their salaries to pay for it. Other health plans may require a smaller contribution from the employee but involve large deductibles and par-

tial payment by the employee in the event of an illness or hospitalization.

Many companies have begun to offer so-called cafeteria benefit plans. With them, employees get a limited number of credits with which they can purchase a selection of benefits from a list. This sounds innocuous until you discover that what it really means is employees now get only a subset of the benefits that they used to receive.

Do not be shy about asking to review a company's benefits booklet before accepting a job there, and be sure to have any confusing benefits options explained to you.

Another expense you may be unaware of when accepting a job in a major metropolitan area is the cost of parking. If a downtown employer does not provide parking in company garages — and many do not — the cost of parking on your own can easily reach \$30 or \$40 a week. Even when the company provides a garage, employees may still have to pay to use it. Individuals report deductions from their paychecks of as much as \$50 for parking.

On the positive side, there are extras some companies offer that can add significantly to your

real income. Profit-sharing plans can provide an extra week's pay or more. One consulting company reports giving employees Christmas bonuses that start at \$1,200 and go up from there.

Also not to be overlooked are discounts on the goods or services an organization provides. A programmer working for a municipal transportation authority, for example, reports that his job brought with it free use of the city's subways, buses and trains. Some companies offer employees the use of elaborate sports facilities that can substitute for an expensive health club membership.

Finally, some companies subsidize the employee cafeteria or provide free coffee, soda and other extras; while they will not make you rich, these benefits may save you a couple of dollars or more a day, or \$500 or so over the course of a year.

There are additional perks that tend to be offered to IS personnel in particular. One is the home use of expensive hardware and software. Many companies loan IS people a high-end computer complete with modem and software that the employee may use at home for the term of his employment. Since the cost of buy-



ing such hardware and software on your own can add up to many thousands of dollars, such a perquisite significantly increases your real income.

A similar perk reported by several IS people is company-paid use of an on-line information service such as BIX or CompuServe. Since devoted "modem

Some popular perks are the result of a relaxed work environment. For example, a number of programmers work for companies that let them come to work dressed in T-shirts and sandals instead of traditional business garb. With business outfits costing \$200 or more, to say nothing of dry-cleaning costs, the free-

If you have not changed jobs in the past three years, you may be unprepared for the serious erosion in the quality of benefits that has taken place at many large employers.

junkies" can easily run up on-line charges of \$100 or more per month, this can add up to a lot of money. Some people have had their company pay for installing and maintaining a second telephone line in their homes dedicated to on-line computing.

If you are active in national organizations or yearn for further education, do not ignore the dollar value of company-paid memberships, courses and junkets. Some enterprising individuals report that, when taking a new job, they negotiate to have the company send them to their favorite trade show, conference or course, complete with airfare, hotels and food. Some companies pay the dues for employees to join professional organizations and may even give them paid time off to attend chapter meetings or prepare papers for presentation at national meetings.

dom to dress casually can translate into major savings.

Many programmers, too, report that they work for companies that let them do significant amounts of work at home and do not question how they spend their time during the week as long as projects get completed on deadline. Others report that their employers give them the freedom to take occasional comp or "sanity days" — days off not included in the standard vacation count. Because such policies can greatly cut down the number of hours that highly productive programmers need to work to earn their salaries, they significantly raise the programmers' hourly income.

Ruhl is a consultant programmer in Connecticut and author of *The Programmer's Survival Guide: Career Strategies for Computer Professionals*.

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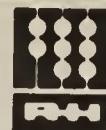
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With IDG Communications new Computer Careers Network. Choose from the Network's five computer-related newspapers and tailor your recruitment message to the type of talented professionals you need to reach -- professionals that read **Computerworld**, **InfoWorld**, **Network World**, **Digital News**, and **Federal Computer Week**. Then, target your audience by region. Or blanket the entire nation.

Call your local sales representative today for more information about Computer Careers Network's regional, national and weekly reach.

Sales Offices

John Corrigan, Classified Advertising Director, 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171; 508-879-0700;

BOSTON: Nancy Percival, Regional Manager; 800-343-6474. (in Massachusetts, 508-879-0700); Andrew Rowe, Account Executive; 800-343-6474.

NEW YORK: Warren Kolber, Regional Manager, 201-967-1350; Jay Novack, Account Executive 800-343-6474;

WASHINGTON, D.C.: Katie Kress, Regional Manager, 703-573-4115; Pauline Smith, Account Executive 800-343-6474;

CHICAGO: Patricia Powers, Regional Manager, 312-827-4433; Ellen Casey, Account Executive 800-343-6474;

LOS ANGELES/SAN FRANCISCO: Barbara Murphy, Regional Manager, 714-250-0164; Chris Glenn, Account Executive, 800-343-6474.

MVS/XA Senior System Programmer

Fujitsu Limited, Japan, is the world's third largest computer manufacturer, and has the second largest share in the world's supercomputer market. Fujitsu Systems Engineering of America is a newly formed direct subsidiary of Fujitsu Limited whose mission is to create more opportunities for software application using Fujitsu computers.

You will be responsible for technical consulting for software application developers in converting MVS based packages to Fujitsu's MSP, using Fujitsu mainframe.

Requires at least 5-7 years system programming experience in Assembler with MVS/XA with a BS in Computer Science preferred. VTAM experience is highly desirable.

For an exciting new perspective on your career, come to Fujitsu. Please send your resume to: Fujitsu Systems Engineering of America, Inc., Dept. CW, 2986 Oakmead Village Court, Santa Clara, CA 95051. We are an equal opportunity employer, m/f/h.



PROGRAMMERS/ANALYSTS

SCIENTIFIC SYSTEMS SERVICES, a wholly owned subsidiary of Computer Task Group Inc., is leading the way in creative solutions within the consulting and customized computer software/systems integration market-place. Strategic plans call for the addition of several highly motivated people.

- PROGRAMMER/ANALYST
- Three years experience with systems design and programming
- System 88
- Layered Products
- COBOL Language

For people with strong capabilities and leadership skills SSS offers an outstanding opportunity. For immediate consideration on these and other positions please send resume to:

Scientific Systems Services
258 Kappa Dr.
Pittsburgh, PA 15238

Equal Opportunity Employer

COMPUTER CAREERS

Planning your way to the top



Weekly
Regional
National It Works!

The Facts: Pure & Simple

- 1 USAA's total assets top \$14 billion
- 2 The USAA organization includes 35 subsidiaries, 19 affiliates, and 25-plus satellite offices
- 3 USAA employees now number 11,000
- 4 USAA is the nation's largest mail order business in terms of sales and volume
- 5 USAA is one of San Antonio's largest private employers
- 6 Forbes calls USAA "A place where the financial supermarket—a one-stop shop for everything from stocks to life insurance—really works."

FACT IS, USAA is a very impressive organization, and we're very proud of our achievements. Our goals for the future are no less impressive: We plan for more of the same—success that results from a dedication to quality in products and services through employees who share our commitment to excellence. We are currently seeking candidates who have strengths in the following areas:

DATA BASE MANAGEMENT

- Requires 5 years experience in IMS application programming
- Proven experience in design, performance and tuning of IMS databases
- IMS application dump debugging skills
- Experience with DB2 table maintenance a plus

IMS SYSTEMS PROGRAMMER

- Requires 2-3 years IMS systems programming experience
- IMS maintenance using SMPE
- IMS dump debugging skills and use of IBM Support Center
- Knowledge of MVS/ESA concepts, IMS internals and DBRC
- Experience in IMS performance and tuning a plus

MVS SYSTEMS PROGRAMMER

- Requires 2-3 years experience installing purchased packages with:
 - Software installation using SMPE
 - CA Products to include: CA1, CA7, CA11 or ACF2
- Experience supporting programmers, operators, and end users

NETWORK MANAGEMENT SUPPORT

- Requires minimum of 4 years experience in IBM's Systems Network Architecture
- Proven understanding of SNA Control and Flow, Problem Determination, and transmission protocols
- Proven experience in VTAM, NCP, Netview, and Communication Controllers
- Experience in Network Capacity Planning, Modeling, Tuning, Automating, and Monitoring

STRATEGIC SYSTEMS DEVELOPMENT

- Requires 3-5 years experience in systems programming on large IBM mainframe
- Emphasis on CICS

SYSTEMS REPORTING

- Requires 2-4 years experience as a MICS Administrator/Coordinator with:
 - Extensive SAS programming experience required
 - 2 years of MVS/ESA Systems Programming experience preferred

HARDWARE SPECIALIST

- Requires 6 years experience in configuration and environmental planning, installation, vendor coordination, and problem resolution for IBM mainframe and I/O equipment or plug compatible equivalents in a large multi-CPU Multi-vendor computer center
- Communications equipment experience preferable
 - Knowledge of the most current IBM mainframes, IBM I/O equipment, and plug compatible equipment available

Qualified candidates please send resume to:

USAA
USAA Building
San Antonio, Texas 78288-0055
Attn: Employment & Placement/
SD/TLL/CW 1127
An Equal Opportunity Employer, M/F.
Principals only, please.



Now you can recruit the right people in the right places at the right price

It's the IDG Communications Computer Careers Network, and it lets you run the most targeted and cost-efficient recruitment program possible.

Its many options help you recruit qualified computer and communications professionals - regionally or nationally - with combination buys of up to five leading newspapers. And all together, the Computer Careers Network delivers your message to an audience of well over 1 million qualified computer professionals.

Look at what the Computer Careers Network lets you do:

Customize your recruitment program. The Network's five newspapers - *Computerworld*, *InfoWorld*, *Network World*, *Digital News*, *Federal Computer Week* - let you tailor your recruitment program to your specific needs. You can buy as many as five newspapers with add-on options. That way you can recruit from the combination of computer and communications professionals that's best for you.

Target your ad placement. You can place your advertising exactly where you want. If you wish to recruit within a specific area, you can advertise in the regional editions of the newspapers you choose - East, West, or Midwest. Or you can extend your reach by running in two regions - or even nationally. Plus - you can still take advantage of stand-alone national rates for individual newspapers.

Reach qualified professionals cost efficiently. Gone are the days when you have to worry about paying for waste circulation. The Computer Careers Network lets you buy the combination of newspapers that will deliver your recruitment message to qualified computer and communications professionals - and only those qualified professionals you need to reach.

To put the new Computer Careers Network to work for you - regionally or nationally - call the sales office nearest you, or contact **John Corrigan, Classified Advertising Director, at 508-879-0700 ext 676**.

One quick phone call can give you all the information you need to run your recruitment advertising in up to five leading industry newspapers.

Visualize the Future of Technology.

You want a company you can be committed to, one where you can learn, grow and develop visions of the future. At Levi Strauss & Co., we offer you all this and more. Our Information Resources Department is building state-of-the-art technological foundations, aggressively utilizing the newest technologies and concepts in information systems, including relational data base, CASE tools, Electronic Data Interchange, and Intelligent Work Stations.

Analyst/Programmers

You will need at least 4 years' experience using COBOL in a mainframe (MVS/XA or DOS/VSE) or mid-range system, and at least 2 years' experience in one of the following:

- IMS/DB/DC
- CICS
- DB2
- VSAM
- TELON
- COBOL II
- FOCUS
- INTERTEST
- ANALYSIS & DESIGN

Experience in one or more of the following applications is desired: manufacturing, order entry, inventory control, sales, traffic and distribution, raw materials, or finance.

Information System Auditor

You will participate in planning, analysis, design, testing, and implementation phases of our systems development life cycle. In addition, you will assist Information Resources by performing system and user acceptance testing and following up on integration and control issues.

You will need a Bachelor's degree, 8+ years' experience in data processing, application and auditing (or equivalent), as well as 5+ years' experience with MVS, CICS, DB2, COBOL, and TSO. Excellent communication skills, and the ability to perform analytical tasks, develop tactical and strategic recommendations, and negotiate solutions are essential.

We invite you to be part of our future. We offer challenge, responsibility, and a great deal of independence along with an excellent compensation and benefits package including an in-house fitness center. For consideration, send your resume with salary history to: Employment Department KB-12, Levi Strauss & Co., P.O. Box 7215, San Francisco, CA 94120. We are proud to be an equal opportunity employer. Female and minority candidates highly encouraged to apply.



It's the efficient way to recruit qualified computer professionals.

Now you can target your recruitment advertising to the qualified computer professionals you want to reach - where you want to reach them. All you need is the new IDG Communications Computer Careers Network. Here's how it can work for you:

You choose the newspapers. Depending on who you're looking for, you can select the combination of five newspapers that best suits your needs - Computerworld, InfoWorld, Network World, Digital News, and Federal Computer Week.

You choose the region. If you wish to recruit within a specific area, you can advertise in the regional editions of the newspapers you choose - East, West, or Midwest. Of course, national buys of individual newspapers or various combinations are also available when you need to extend your reach.

You don't pay for readers you don't want. Gone are the days when you have to worry about paying for waste circulation. The Computer Careers Network puts you in touch with qualified computer professionals - and only those qualified computer professionals you need to reach.

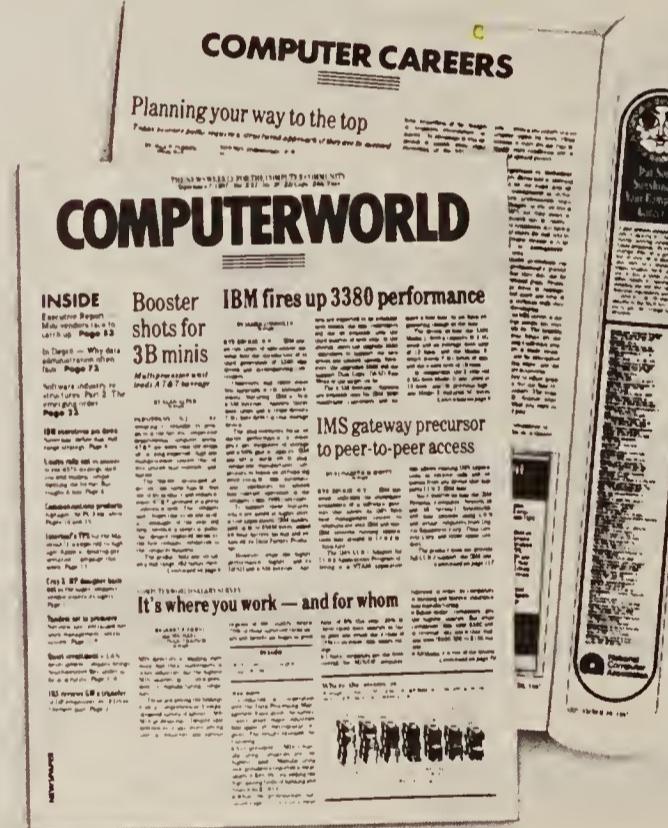
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Sales Offices: **BOSTON:** 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171, (508) 879-0700; **NEW YORK:** Paramus Plaza I, 140 Route 17 North, Paramus, NJ 07652, (201) 967-1350; **WASHINGTON:** 8304 Professional Hill Drive, Fairfax, VA 22031, (703) 573-4115; **CHICAGO:** 10400 West Higgins Road, Suite 300, Rosemont, IL 60018, (312) 827-4433; **LOS ANGELES:** 18004 Sky Park Circle, Suite 100, Irvine, CA 92714, (714) 250-0164; **SAN FRANCISCO:** 18008 Sky Park Circle, Suite 145, Irvine, CA 92714, (714) 250-0164

Weekly. Regional. National. And it works!

Just four reasons why more companies run more recruitment advertising in *Computerworld* than in any other specialized business newspaper.

For more information or to place your ad regionally or nationally, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700).



Weekly. Regional. National. And it works.

An IDG Communications Publication



Systems Analyst; 40 hrs/wk; 8am-5pm; \$28,500/yr; overtime as needed, not compensated. Job requires: Bachelor's degree in Computer Engineering OR Computer Science. Job also reqs.: 1) 1 college course in accounting; & 2) 1 college course in quantitative methods. Job Duties: Develop, design, & implement new computer systems for business applications for clients in manufacturing & distribution industries. Business applications include accounts receivable, general ledger, payroll, accounts payable, job costing, inventory control, & purchasing/receiving. Convert existing accounting package to AS-400 systems. Qualified applicants should send resume & verification of reqs. to: 7310 Woodward Ave, Rm 415, Detroit, MI 48202, Ref #65389. Employer paid ad.

- VM & MVS Sys Prog.
 - Production Analyst
 - Network Specialists H/W, S/W & LAN's
 - Academic Support Programmer Analysts
 - DBA
 - Operation Shift Leaders
- Equipment:**
- IBM 3083-JX 24Mb
AMD 5860 24Mb
- MVS, CICS, IDMS, IMS, VM/HPO, ACF/VTAM, SMP/E, RACF, Assembler.
- All positions require a degree plus a min. of 3 years experience in a large mainframe environment together with good communication skills and the ability to lead and train others.
- Please apply to Supervisor, Computer Center, King Saud University, P.O. Box 2454 Riyadh 11451, Saudi Arabia.

ANALYST & PROGRAMMERS

IBM, OS/MVS, COBOL, CICS, DB2
LET US BE
YOUR CONNECTION TO THE FUTURE.
PLEASE CALL OR SEND RESUME TO:
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GRAHAM, NC 27253
ATTN: SHERRY RAMSEY
919-227-5806
FAX#: **919-227-5852**

Analyst/prgrmr, Portland area. Prvde client specified expertise on proj to dvp batch, on-line & DB systems to support biz/mfg/finan'l appls. Gthr/analyze data for convrns to cmprtr func; iface w/client mgmt to dtrmcne user rqnmts. Responsbl for system specs, coding, testing, troubleshooting to resolve software rlttd prblms. Maintain quality stdnds & levels of docmntn. Technology used: IBM 30xx, 43xx, 370; OS/MVS/XA, DOS, JCL, DL/1, MARK IV, VSAM, TSO, CICS, COBOL. Rqmnts: Bachelor's Comp Sci, Math or Engng - or equiv. Will accept as equiv: any 4 yr degree w/30 crdts comprtr rtd. 2 yrs exp in job or 2 yrs A/P exp using above tech & appls. 40 hrs/wk. \$32,500/yr. Resume to: Employment Div, Attn: Job Order #2418658, 875 Union St NE, Rm 201, Salem, OR 97311.

NCR COMPUTER OPERATIONS MANAGER
Bank Holding Company seeks Assistant Manager for its computer operations and item processing department. A successful candidate must have a minimum of ten years experience with at least five of management in large bank data processing operations. NCR equipment and extensive background in VRX or VRX-E a plus. Excellent salary, benefits and profit sharing available. Send resume including salary history to:

Kenneth C. Boyd
Jefferson Data Services, Inc.
P.O. Box 2738
Charlottesville, VA 22902
EOE

Northern California EXCLUSIVE POSITIONS

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IDMS, CICS, IMS VAX-RDB
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 • Sr. Bus. Analyst
 • Project Managers
 • Systems Programmers
 • Data Base Analysts
 • Technical Editors

Chuck Klein & Assoc.
3840 Thorson Dr.
Placerville, CA 95667
(916) 644-6396

Reach qualified professionals cost efficiently. Gone are the days when you have to worry about paying for waste circulation. The Computer Careers Network lets you buy the combination of newspapers that will deliver your recruitment message to qualified computer and communications professionals - and only those qualified professionals you need to reach.

To put the new Computer Careers Network to work for you - regionally or nationally - call the sales office nearest you, or contact John Corrigan, Classified Advertising Director, at 508-879-0700 ext 676.

One quick phone call can give you all the information you need on running your recruitment advertising in up to five leading industry newspapers.

- Production Analyst
- Network Specialists H/W, S/W & LAN's
- Academic Support Programmer Analysts
- DBA
- Operation Shift Leaders

IBM 3083-JX 24Mb
AMD 5860 24Mb

MVS, CICS, IDMS, IMS, VM/HPO, ACF/VTAM, SMP/E, RACF, Assembler.

All positions require a degree plus a min. of 3 years experience in a large mainframe environment together with good communication skills and the ability to lead and train others.

Please apply to Supervisor, Computer Center, King Saud University, P.O. Box 2454 Riyadh 11451, Saudi Arabia.

AS/400 S/38

THE PROFESSIONAL'S CHOICE...

...is Whittman-Hart, the largest diversified technical services company (dedicated strictly to the AS/400 and S/38 systems) in the country. We provide technical support to many of the top Fortune 20 companies in America. We are a team of experts, mastering technologies, executing details and finding solutions. Our accelerated growth and phenomenal success has created a need for talented Data Processing PROFESSIONALS to share in a future of significant challenge and reward in a highly progressive team environment.

Our current need requires individuals with 2+ years solid System 38, RPG III/COBOL experience and proficiency in any of the following:

- Technical Consulting
- Design
- Education & Training
- Data Communications
- Project Management
- Product Development

Whittman-Hart offers one of the finest compensation packages in the industry, including high earnings potential, project diversity, incentives, paid insurance coverage, relocation allowance and other impressive benefits. Please send your resume in strict confidence to: Jared Bobo, Manager of Recruiting, Whittman-Hart, INC., 377 East Butterfield Road, Suite 390, Lombard, IL 60148, (708) 971-2270.

Whittman-Hart
The Leader in the Midrange Solutions.

DB2 Executive Consultant

GE Consulting Services' Technology Migration Practice is currently involved with a number of migrations nationwide. Success and rapid growth have created an immediate need for a senior level consultant who will provide Data Base Strategic Planning as part of our executive management team. Successful candidates will possess:

- 8-10 years data base experience with recent emphasis on DB2 development and design
- Strong application experience in multiple data base environments
- Strong interpersonal skills and ability to conduct executive level meetings

This extremely visible position reports to the Director of the Technology Migration Practice in Albany, NY. Some travel is required, but relocation is not necessary.

GE Consulting Services is in the business of developing software solutions through the integration of application software, data processing and communication technology. The continued success of our Project-based Businesses represents another facet of our growing commitment to the leading edge technology industry. As part of the GE family, we offer an excellent compensation package, GE benefits, high visibility and career growth.

Send resume in strict confidence to: **L. S. Mendelson**
GE Consulting Services
17 Computer Drive West
Albany, NY 12205



GE Consulting Services

An Equal Opportunity Employer

DOUBLETREE
MANAGER OF SYSTEMS AND PROGRAMMING

Doubletree, a leader in the hospitality industry, is dedicated to the use of information technology as a strategic component of our business plan. We are seeking a highly-motivated MIS professional to join our team as Manager of Systems and Programming.

Candidate must have a minimum of 8 years of systems and programming experience, including at least 4 years as a systems manager with project level responsibility. Experience with multiple IBM AS/400 and System 38/36 computers in a highly-networked environment is essential. In addition, a college degree (preferably an advanced degree) in business or computer science is required.

Excellent management and communication skills are key. Leadership capabilities as well as the ability to work with all levels of corporate and operating staff is essential.

This is an excellent opportunity to join the Doubletree team and contribute to IS development with an industry leader. Send resumes (including salary history) to:

DOUBLETREE, INC.
Attn: Robin Wilson, 410 N. 44th Street, Suite 700, Phoenix, Arizona 85008.
EOE/M/F

It's easy to place your recruitment ad in Computerworld!

All the information you need is right here. Just call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700). Or, if you want, you can send us the form below via mail or to our FAX machine. You can reach our FAX at ext. 739 or 740 at either of the above numbers.

The following information will help you determine the size ad you'd like to run and when you'd like to run it.

CLOSING DATES: To reserve space, you need to call us by 5PM (all continental U.S. time zones), 6 days prior to the Monday issue date. We need your ad materials (camera-ready mechanical or copy for pub-set ad) by 5PM, 5 days prior to the weekly issue.

AD COPY: We'll typeset your ad at no extra charge. You can give us copy via phone, U.S. mail, or FAX. To typeset an ad for you, we need clean, typewritten copy. Figure about 30 words to the column inch, not including headlines. (There are seven columns on each page.)

LOGOS AND SPECIAL ARTWORK: Any logos or special artwork should be enclosed with your ad copy. For best reproduction, please send us either a stat of your logo or a clean sample on white bond paper.

COLUMN WIDTHS AND MINIMUM DEPTHS: Your ad can be one of seven different widths. There is a minimum depth requirement for each width. You can also run larger ads in half-inch increments. The chart below can serve as a reference.

NUMBER OF COLUMNS	WIDTH	MINIMUM DEPTH
1 column	1-1/4"	2"
2 columns	2-5/8"	2"
3 columns	4-1/16"	3"
4 columns	5-9/16"	4"
5 columns	6-15/16"	5"
6 columns	8-3/8"	6"
7 columns	9-3/4"	7"

RATES: Your rate will depend on the size of your ad and whether you choose to run regionally or nationally. The national rate is \$13.50 per line or \$189.00 per column inch. The regional rate (Eastern, Midwestern or Western editions) is \$9.00 per line or \$126.00 per column inch. You can run your ad in any two regions for \$11.60 per

line or \$162.40 per column inch. In all cases, you can earn volume discounts.

The minimum ad size is two column inches (1-1/4" wide by 2" deep) and costs \$378.00 if run nationally. A sample of this size appears below. You can run larger ads in half-inch increments at \$94.50 per half inch. Box numbers are available and cost \$25 per insertion (\$50 if foreign).

Programmer Analyst

This is a sample ad for Computerworld's Computer Careers section. It will help you decide what size ad you'd like to run. Remember that you can run your ad either regionally or nationally in our recruitment section and that the minimum ad size is one column (1-4/16 inches wide) by two inches deep (like this sample). This ad would cost \$378.00 in our national edition, \$252.00 in the Eastern, Midwestern, or Western edition, and \$324.80 in two regions; volume discounts apply.

SAMPLE AD SIZES AND PRICES: To assist you in planning your recruitment advertising, the following shows common ad sizes and their respective costs.

One Region (East, Midwest or West)	Two Regions (East/West Midwest/West)		National Edition
	East/Midwest	Midwest/West	
1 column x 2"	\$ 252.00	\$ 324.80	\$ 378.00
2 columns x 2"	\$ 504.00	\$ 649.60	\$ 756.00
3 columns x 3"	\$1,134.00	\$1,461.60	\$1,701.00
4 columns x 5"	\$2,520.00	\$3,248.00	\$3,780.00
5 columns x 7"	\$4,410.00	\$5,684.00	\$6,615.00

PAYMENT: If you're a first-time advertiser or if you haven't established an account with us, we need your payment in advance (or with your ad) or a purchase order number. Once you have established an account with us, we'll bill you for any ads you run as long as your payment record is good.

COMPUTER CAREERS NETWORK BUYS:

You can take advantage of special rates that let you run your ad in *Computerworld* and *Computerworld's* sister newspapers at special rates. Choose from *Computerworld Focus on Integration*, *Network World*, *InfoWorld*, *Digital News* and *Federal Computer Week*. Call for details.

Computerworld Recruitment Advertising Order Form

Ad Size: _____ columns wide by _____ inches deep

Issue Date(s): _____

Name: _____

Company: _____

Address: _____

Telephone: _____

Region: East Midwest West **National:**
 East/Midwest Midwest/West East/West

Send this form to: COMPUTERWORLD RECRUITMENT ADVERTISING
 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171
 800-343-6474 (In MA, 508-879-0700)
 Telecopier Extensions: 739 or 740



It's the efficient way to recruit qualified computer professionals



Now you can target your recruitment advertising to the qualified computer professionals you want to reach - where you want to reach them. All you need is the new IDG Communications Computer Careers Network. Here's how it can work for you:

You choose the newspapers. Depending on who you're looking for, you can select the combination of five newspapers that best suits your needs - Computerworld, InfoWorld, Network World, Digital News, and Federal Computer Week Editions.

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BOSTON: 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171, Nancy Percival, Regional Manager; 800-343-6474. (in Massachusetts, 508-879-0700); Andrew Rowe, Account Executive.

NEW YORK: Paramus Plaza I, 140 Route 17 North, Paramus, NJ 07652; Warren Kolber, Regional Manager, 201-967-1350; Jay Novack, Account Executive 800-343-6474.

WASHINGTON, D.C.: 8304 Professional Hill Drive, Fairfax, VA 22031; Katie Kress, Regional Manager, 703-573-4115; Pauline Smith, Account Executive 800-343-6474.

CHICAGO: 10400 West Higgins Road, Suite 300, Rosemont, IL 60018; Patricia Powers, Regional Manager, 312-827-4433; Ellen Casey, Account Executive 800-343-6474.

LOS ANGELES: 18004 Sky Park Circle, Suite 100, Irvine, CA 92714; Barbara Murphy, Regional Manager, 714-250-0164; Chris Glenn, Account Executive, 800-343-6474.

SAN FRANCISCO: 18008 Sky Park Circle, Suite 145, Irvine, CA 92714; Barbara Murphy, Regional Manager, 714-250-0164; Chris Glenn, Account Executive, 800-343-6474.

SYSTEMS ANALYST/PROGRAMMER

Work Location: Las Vegas, Mercury and Tonopah, Nevada

These positions require a bachelor's degree in business administration, mathematics, engineering, computer sciences, or related fields. Must have two or more years of applicable systems analysis and programming experience, to include COBOL and/or FORTRAN programming on timesharing systems. Vax experience preferred. Should be able to communicate effectively with business and engineering people and have a solid foundation in structured methods of design and programming.

EQUAL OPPORTUNITY EMPLOYER- M/F

Liberal Fringe Benefits

Replies Held Confidential

Must be a U.S. Citizen

Drug/alcohol screening test required

SEND RESUMES TO: Trudie L. Rainey
Recruiting & Employment Administrator
Reynolds Electrical &
Engineering Co., Inc.
Post Office Box 98521
Las Vegas, NV 89193
Tel: (702) 295-1900



\$\$\$ HIGH \$\$\$

FORTUNE 500 CLIENTS!

We have an urgent need for contractors with the following skills for Illinois, Arizona, Florida.

- IMS/DB/DC
- COBOL
- DB2
- APL
- CICS
- DBASE III
- AS 400
- ADS
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Orlando, Florida 32809

407-859-9071

or

14040 North Cave Creek,
Suite 305C
Phoenix, Az. 85032
602-482-6828



SYSTEMS SOFTWARE SPECIALISTS, INC.

SOFTWARE PROFESSIONALS

Take A Closer Look At CPU... You'll Like What You See.

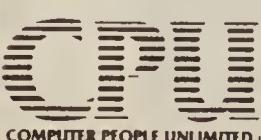
Computer People Unlimited is the largest computer software services firm headquartered in the state of Wisconsin. We provide a full spectrum of data processing and engineering software services to the area's best companies.

A consulting career with us can provide you with diversity, stability, exposure to the latest technology and professional growth as well as a competitive salary and outstanding benefits.

Although we have opportunities for professionals in all areas, our highest priority is for individuals with any of the following skills:

TANDEM, TAL, COBOL, PATHWAY, VAX, OR EXPRESS

To take a closer look at CPU and see what opportunities are available for you, contact: Bill Rudd, Dean McMath or Kathi Fowler by calling our toll free number: 1-800-527-8462. Or send your resume to CPU, Dept. CW-1120, 744 N. 4th Street, Milwaukee, WI 53203. No entry level positions available. We are an equal opportunity employer.



COMPUTER PEOPLE UNLIMITED INC.

MARKETPLACE

Software supplier insolvency

Escrow agents can help a firm keep afloat while its vendor sinks in debt

BY RAYMOND T. NIMMER
SPECIAL TO CW

Years ago, only creditors needed to worry whether the companies they were dealing with would become insolvent or go out of business. All that changed in 1978, when Congress enacted a new bankruptcy code. Now, whenever you contract for software, you have to think about how long your supplier will stay in business.

The list of companies whose software developers have gone bankrupt is probably shorter than many people suspect. However, their stories are often traumatic: A company licenses a program and builds or operates its business around it. Then one day, without warning, the vendor is out of business. Consequently, the user must negotiate continued support and perhaps the right to keep using the program.

What problems confront the licensee? First, it is necessary to face the facts. If the vendor closes its offices and disappears, all promises of future support, upgrades and advice are essen-

tially meaningless. One cannot get blood from a turnip.

Can the licensee find someone else to make modifications and provide advice when its vendor goes under? Sometimes the solution is simple. If the basic program has numerous end users, there may be many in-house experts who can fill the breach and supply the support no longer available from the vendor.

In other cases, however, the answer will depend on whether the licensee has access to the information that a new service provider needs in order to deliver support. Here, the reference is to physical access to information that is accurate, current and usable. End users need clear manuals, complete and understandable documentation and source code from which corrections or adjustments can be made. It is often too late to get this information once the vendor is out of business: Where does one call if phones are disconnected and the office is closed?

For starters, a software contract should require that these materials be created. If it can, the licensee should take posses-

sion of the materials when the software is delivered. However, not all software developers will consent to providing them; there are risks of losing trade secrets and control over copyrighted material.

Because of this risk, in many large contracts the principals bring in a third party to hold source code and provide it to the licensee if the vendor fails to live up to the terms of the license. Several companies specialize in offering such source-code escrows. These escrow agents may cost more than the licensee is willing to pay for them, however.

Concern over quality

There are also questions of quality: How can one ensure that the information that goes into escrow is adequate and continuously updated without being able to review it? There is no good solution to this problem beyond reliance on the vendor and the escrow agent.

Even if the vendor does not disappear, as it encounters financial problems, creditors may be at its door, demanding whatever of value they can get. The licensee may face a contest with these creditors for the right to documentation, code and other im-

portant information. An escrow arrangement will avoid this situation.

Alternatively, a licensee may take a security interest in copyrighted code. This will give it a right to the code that supersedes the rights of unsecured creditors. Once again, however, there are problems. Not all licensors will agree to this option. It requires a public filing that can affect their future access to credit.

Bankruptcy risks

Now, we come to the risk that the vendor will file for bankruptcy. Since many businesses in bankruptcy continue to operate largely as they did before filing for it, the vendor may not disappear, but the license may do so. Technology licenses are what bankruptcy lawyers describe as "executory contracts." The licensor or its trustee can assume and enforce the license or, if preferred, cancel it.

Prior to 1988, this possibility exposed licensees to the risk that their software rights would simply be taken away or that the vendor would threaten to take them away to negotiate a larger royalty.

In 1988, Congress changed the law. The vendor can still reject a license, but the licensee can refuse to accept this choice. It can retain its rights in the software and any agreement supplemental to its license. The licensee must continue providing royalties or other payments, but

it can enforce any agreement under which it has the right to receive intellectual property, such as code, from the licensor or a third party.

Life, however, is never perfect. These new rules do not require the vendor to maintain the software or provide support services. Also, the bankruptcy law does not create a right to receive intellectual property; that must be done in the contract.

As with many contract problems, the risks in this area can be reduced if licensees recognize them and deal with them early in the process. But they often do not do so. Once again, the moral of the story is to be cautious and plan carefully: Don't walk casually into a dark alley.

Nimmer is Foundation Professor of Law at the University of Houston, counsel to the law firm Sheinfeld, Maley & Kay and author of *The Law of Computer Technology* (Warren, Gorham & Lamont, New York).

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PS/2 Model 60	\$2,700	\$3,100	\$2,500
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Portable III	\$2,350	\$2,875	\$2,100
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Plus	\$750	\$950	\$675
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Deskpro 386	\$2,500	\$2,900	\$2,500
Apple Macintosh 512	\$675	\$900	\$550
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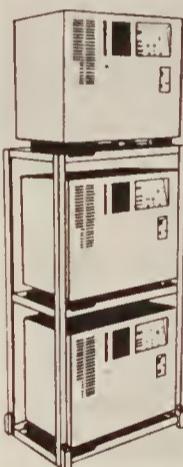
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BY NAOMI KARTEN
SPECIAL TO CW

The selection of a vendor to deliver training can be a subjective process. The result is that sometimes the business goes to the vendors who are best at selling their services rather than the ones most qualified to deliver those services.

One way to make the selection more objective is through a request for proposal (RFP) procedure, which lets an organization methodically gather and evaluate proposals from vendors. However, while organizations may be methodical in preparing and sending out RFPs, some of them are considerably less organized in evaluating the results. Their selection of a vendor may be based on the look of a proposal, the quality of a sample class or a vague feeling that one vendor is better than the others.

To ensure that the evaluation is objective, organizations should prepare a list of the criteria that will guide the evaluation. These criteria revolve around the items

in the RFP, such as the vendor's experience, course offerings, training materials, instructors, financial stability, costs and schedules.

Each of these items may be further subdivided. For example, cost information may be split into course fees, payment schedules, discounts and cancellation penalties. Similarly, instructor qualifications may be broken down by instructor background, training experience, formal credentials, breadth of computer knowledge and ability to stay technically current. The complete list of criteria serves as a checklist against which proposals can be evaluated.

The evaluation should reflect a weighting factor for each criterion indicating its relative importance. The simplest approach is to use a three-point scale with 1 indicating minimal importance and 3 maximum importance. Regarding instruc-

tor qualifications, for example, an organization may view training experience as key and assign it a weight of 3. Formal credentials may be viewed as much less important and be assigned a 1. To ensure objectivity, the group should assign these weights before reviewing proposals.

The rating of proposals should also be based on a scale of perhaps five or seven points. The evaluation team's rating for each criterion indicates the degree to which a proposal matches the organization's needs.

The score for each criterion is then the product of the rating and weighting factor. A vendor's total is the sum of these scores, and the highest-scoring organization gets

the business.

Judging and scoring proposals can be tedious and time-consuming, and personnel limitations often cause the process to end up being the responsibility of one

person. Because training can have such a significant impact, however, the evaluation should be a team effort. In addition to the value of their feedback, the participation of employees from areas that will be affected by the training can help ensure their support of the final decision.

Depending on the type of training under consideration, it may be appropriate to include representatives from user departments, the information center or the human resources organization. In addition, people from accounting and legal departments may help evaluate certain criteria. Each person can be assigned to the section pertaining to their expertise.

Although the entire RFP process is designed to eliminate personal bias, subjectivity does have its place. For example, if a particular proposal is exceptionally sloppy, it would be reasonable to simply eliminate it from the running. If a proposal departs significantly from the required format or content, the evaluation team may be concerned about the vendor's ability to conform to standards and eliminate it.

Another aspect of the evaluation that inevitably involves personal bias is a meeting with the vendor. Interviews with representatives of the vendor, as well

as observation of one of its classes, can have a significant impact on the final decision, either positively or negatively. For example, an instructor who smoked two cigarettes simultaneously, read each projected foil to the class without adding anything to it and made disparaging remarks about his company — an actual occurrence — would not be invited back. High ratings on other criteria could not compensate for this unprofessional behavior.

Any deviations from the evaluation process are permissible provided the team agrees to them and documents them as they happen. However, documentation is not for exceptional situations only. It is important to document the entire process, especially if it will lead to a vendor winning a lucrative contract. It is advisable to keep good records of the evaluation to be prepared for a challenge.

Evaluating the qualifications of training vendors in an objective manner can help ensure that an information systems organization will select the vendor that will most effectively support its needs.

Karten is president of Karten Associates in Randolph, Mass., and editor of the monthly newsletter "Managing End-User Computing."



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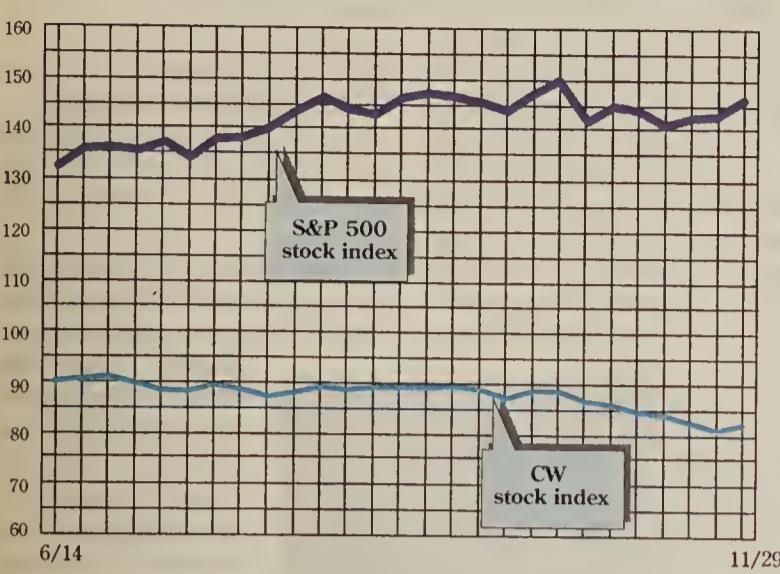
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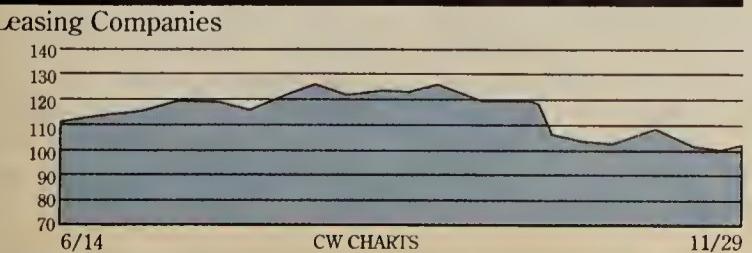
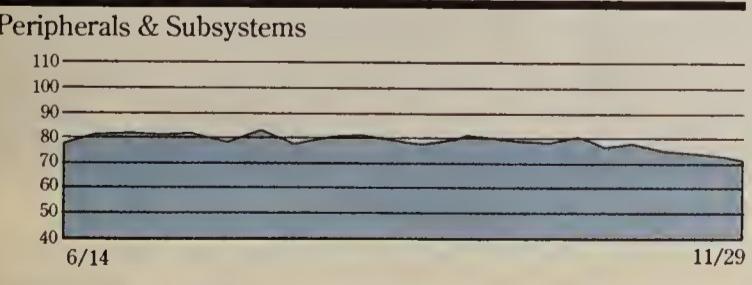
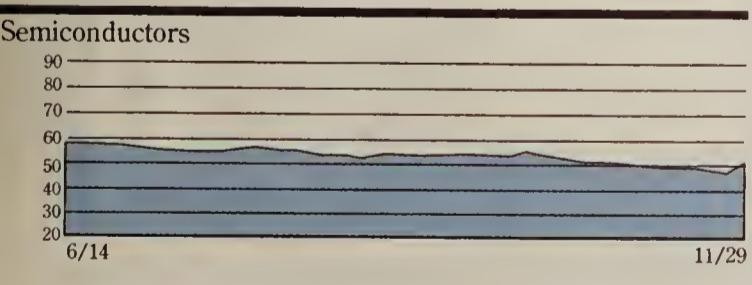
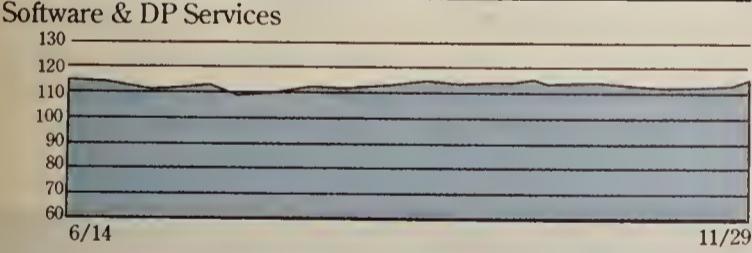
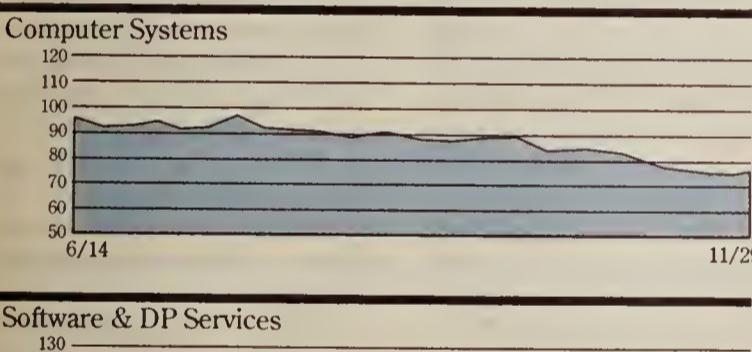
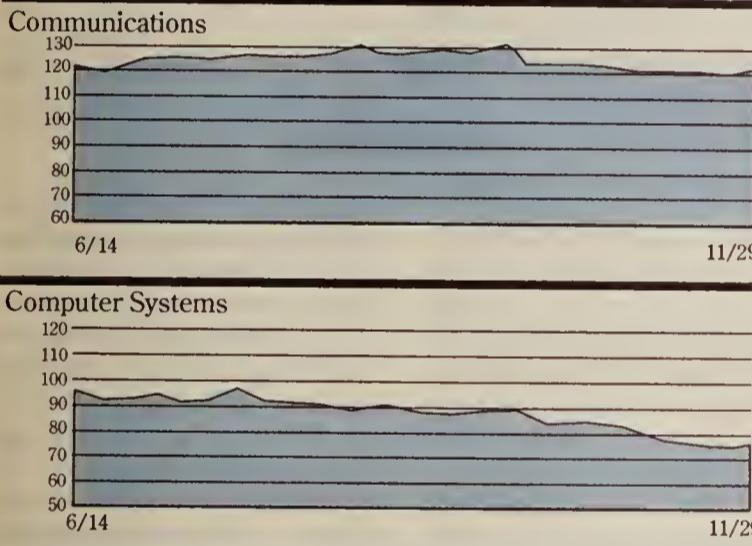
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N	AOV MICRO DEVICES INC	11 7	7.5	-0.1 -1.6
Q	ANALOG DEVICES INC	13 8	8.625	0.4 4.5
Q	ANALOGIC CORP	11 7	9.5	0.3 2.7
Q	CHIPS & TECHNOLOGIES INC	26 11	18.25	0.3 1.4
Q	INTEL CORP	35 20	34.75	1.3 3.7
Q	MICRON TECHNOLOGY INC	26 10	10.125	0.0 0.0
N	MOTOROLA INC	63 37	59	1.4 2.4
N	NATL SEMICONDUCTOR	10 6	7	0.5 7.7
N	TEXAS INSTRS INC	47 28	36	4.3 13.4
A	WESTERN DIGITAL CORP	15 6	8.25	1.6 24.5

Semiconductors

Communications and Network Services

N	AMERICAN INFO TECHS CORP	65 46	59.875	0.0	0.0
Q	ANOREW CORP	26 17	24.5	0.3	1.0
Q	ARTEL COMM CORP	9 2	6.125	0.3	4.3
N	AT&T	46 28	42.75	-0.5	-1.2
Q	AVANTEK INC	7 4	4	-0.3	-5.9
N	AYDIN CORP	21 14	17.125	1.1	7.0
N	BELL ATLANTIC CORP	105 69	102	0.0	0.0
N	BELLSOUTH CORP	55 39	52.375	0.8	1.5
Q	COMPRESSION LABS INC	11 3	8.375	0.8	9.8
Q	CONTEL CORP	37 19	32.125	2.0	6.6
Q	DATA SWITCH CORP	6 2	3.5	0.9	33.3
Q	DIGITAL COMMUNICATIONS ASSOC	26 17	18.125	-0.3	-1.4
Q	OYNATEC CORP	21 16	16.75	0.0	0.0
Q	FIBRONICS INTERNATIONAL INC	7 4	6.75	0.1	1.9
Q	GANDALF TECHNOLOGIES	7 4	5.875	0.5	9.3
N	GENERAL OATACOMMINDS	7 4	4.5	0.0	0.0
N	GTE CORP	68 43	67	1.8	2.7
N	INFOTRON SYS CORP	13 8	8.5	-0.3	-2.9
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N	M A COM INC	9 5	5.375	-0.5	-8.5
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Q	ALLIANT COMPUTER SYS	7 3	5.5	-0.3	-4.3
Q	ALPHA MICROSYSTEMS	8 4	4.5	-0.3	-5.3
Q	ALTOS COMPUTER SYS	9 6	7.5	-0.3	-3.2
A	AMDAHL CORP	23 11	12.5	0.3	2.0
Q	APPLE COMPUTER INC	50 34	44	-1.3	-2.8
N	BOLT BERANEK & NEWMAN	13 6	7.125	0.1	1.8
N	COMPAG COMPUTER CORP	113 54	89.5	-2.9	-3.1
N	COMMODORE INTNL	20 7	8.625	1.3	16.9
N	CONTROL DATA CORP	24 17	16.625	-0.4	-2.2
N	CRAY RESH INC	66 32	33.5	1.4	4.3
Q	DAISY SYS CORP	7 0	0.563	-0.1	-9.9
N	DATA GEN CORP	20 13	14	1.0	7.7
N	DATAPOINT CORP	6 3	4.5	0.4	9.1
N	OELL COMPUTER CORP	12 5	5.625	-0.4	-6.3
N	DIGITAL EQUIP CORP	122 84	85.75	-3.1	-3.5
N	FLOATING POINT SYS INC	4 1	1.625	0.1	8.3
N	HARRIS CORP	40 26	33.375	-0.5	-1.5
N	HEWLETT PACKARD CO	62 40	44.25	-0.1	-0.3
N	HONEYWELL INC	92 57	79.375	-1.4	-1.7
N	IBM	131 96	97.75	-1.8	-1.8
Q	INFORMATION INTERNATIONAL AL INC	16 12	12.5	0.0	0.0
Q	IPLSYS INC	9 4	6.75	0.3	3.8
N	MAI BASIC FOUR INC	11 3	3.375	0.0	0.0
N	MATSUSHITA ELEC INDUSTRIAL LTD	204 154	160	3.5	2.2
Q	MENTOR GRAPHICS CORP	22 13	16.75	1.5	9.8
N	N8I INC	3 1	0.625	-0.1	-9.2
N	NCR CORP	67 52	61.25	0.3	0.4
N	PRIME COMPUTER INC	21 7	7	-0.1	-1.8
Q	PYRAMID TECHNOLOGY	20 9	16.5	-0.3	-1.5
Q	SEQUENT COMPUTER SYS INC	21 8	19.5	2.0	11.4
Q	SHAREBASE CORP	4 0	0.25	0.0	0.0
Q	SILICON GRAPHICS CORP	27 14	25	1.3	5.3
Q	STRATUS COMPUTER	35 21	21.625	-1.9	-8.0
Q	SUN MICROSYSTEM INC	23 13	16.125	0.5	3.2
Q	SYMBOLICS INC	3 1	1.5	0.0	0.0
N	TANOEM COMPUTERS INC	26 15	22.75	-0.6	-2.7
N	ULTIMATE CORP	49 38	43	0.9	2.1
N	UNISYS CORP	31 12	14.375	0.0	0.0
A	WANG LABS INC	11 5	5.25	0.3	5.0

Leasing Companies

Q	AMPLICON INC	115 11	11.5	0.0	0.0
N	CAPITAL ASSOC INTNL INC	9 4	4.375	0.0	0.0
N	COMIOSCO INC	34 19	26.25	1.5	6.1
Q	CONTINENTAL INFO SYS	3 0	0.344	0.0	0.0
Q	LDI CORPORATION	18 12	17.25	0.3	1.5
Q	PHOENIX AMERINC	5 3	3.813	0.1	1.7
Q	SELECTTERM INC	9 5	6.5	0.0	0.0

EXCH:N=NEW YORK;A=AMERICAN;Q=NATIONAL

G

Health care needs IS injection

BY J. A. SAVAGE
CW STAFF

Anyone who has ever been charged \$10 for two generic aspirin in a hospital knows there are serious efficiency and cost-overrun problems in the health-care industry. A simple aspirin transaction can cost hospital staff 20 pieces of paper and several hours' wait.

However, while health-care costs are a national problem and hospitals are saddled with declining revenues, the health-care industry has shown little interest in applying information technology for relief.

An Ernst & Young Accounting Firm International report to the U.S. Health and Human Services Department following a

committee hearing last year said: "Without sophisticated means to process [patient] data, neither the nursing profession nor the [health-care] industry and the public it serves are likely to achieve all the benefits of contemporary health care. Nor are hospitals likely to fulfill all their potential as health-care businesses."

Mark Gross, national director of health care information services at Ernst & Young in Cleveland, estimates that 500-bed hospitals spend only about 2.5% of their operating budget on information systems devoted to patient care. "It's a paradox; hospitals are an information-intensive business, and a similar-size manufacturing plant spends eight to 15 times more money on

systems," Gross said.

Hospitals that have implemented patient-care technology claim they can offer higher quality care for less money. The other benefits they cite include the following:

- Retaining nurses in an era of nursing shortages.
- Keeping beds occupied in competitive regions.
- Accurately entering doctors' prescriptions and flagging negative drug interactions and allergies.
- Speeding patient access to medicine, lab tests or therapy.

Because it costs less to practice at computerized hospitals, doctors say they are more likely to schedule patients there.

"In an average hospital, one-third of nursing money goes to indirect patient care [paperwork]," said David Kimball, vice-president of information systems at Pacific Presbyterian Medical Center in San Francisco. "When you're looking at nursing shortages and expensive resources, it's an amazing way to spend money." Kimball is betting that a new patient-care system being installed at Pacific Presbyterian will make the hospital more attractive to physicians and help fill beds.

Nurses agree that computerized patient care moves them "away from handling papers and back to the bedside," said Marilyn Davis, director of IS systems

at El Camino Hospital in Mountain View, Calif. Davis was head nurse during the time El Camino's patient-care system was installed.

No hard statistics exist on how many hospitals have computerized patient care. According to the American Hospital Association, there are 2,091 U.S. hospitals with more than 200 beds. But the largest supplier of hospital systems — TDS Healthcare Systems Corp. in Atlanta — has only 120 installations.

The federal government has shown little interest in pushing information technology onto the hospital floor, despite its emphasis on cost reduction, according to Richard Covert, director of health-care information and management systems at the American Hospital Association in Chicago. Most large hospitals have computerized billing and payment through Medicare or other federal systems. Little incentive, however, has been offered in other areas such as patient care. "The federal government seems to be preoccupied with payment," Covert said.

Compounding the

lack of technology choices is hospital management that avoids or does not understand computers.

"We talked with CEOs and found they were less than fully familiar with what technology can do," said Carolyn Davis, an Ernst & Young analyst who chaired last year's Health and Human Services committee meeting.

"CEOs of hospitals have not embraced technology to any degree vis-a-vis other institutions," Gross added.



El Camino's Davis at nurses' station

Paperweight

Hospital automation gives nurses more time at the bedside and less at a desk.

For instance, to give a patient a painkiller, a nurse would typically transcribe a doctor's prescription to an order sheet, have it taken to a pharmacy and then back to the nurses' station. There, the nurse would have to fill out more paperwork to have the medication added to the patient's history and cross-check that history for drug allergies before administering the drug. With an automated system, a doctor types in the order at a terminal, where the software cross-checks for the patient's drug allergies and any potential synergistic problems with other medications. The order pops up on the pharmacist's terminal, and it is sent to the nurses' station for direct administration.

El Camino Hospital in Mountain View, Calif., saves about \$20 per patient per day through the use of an automated system, according to Chief Executive Officer Neilson Buchanan. For a 500-bed hospital, that totals \$10,000 per day. El Camino, the oldest computerized hospital in the country, has used a TDS Healthcare Systems Corp. system for 17 years.

J.A. SAVAGE

Stardent takes a swing at midrange market

BY JAMES DALY
CW STAFF

SUNNYVALE, Calif. — The first fruits of the Stellar Computer, Inc. and Ardent Computer Corp. merger ripened last week with the rollout of a machine that looks to grab new markets by shifting the combined company's focus upward from the desktop to the midrange.

Stardent Computer, Inc.'s 3000 series graphics supercomputer, when fully configured with four 32-MHz Mips Computer Systems, Inc. chips, can process up to 192 million floating-point operations per second, which squares it off against the Convex Computer Corp. C2 and

Digital Equipment Corp. VAX 9000 lines.

"The end of the VAX is in sight; they've given it their best shot, and it just ain't good enough," claimed Gordon Bell, Stardent's chief scientist. As a researcher at DEC, Bell was one of the principal designers of the VAX architecture.

Stardent officials said they intend to go beyond the scientific market they have targeted in the past and aggressively pursue customers in commercial sectors such as medical imaging.

While the phenomenal graphics and muscular processing power of the Stellar and Ardent lines made them a hit in the engineering and scientific worlds, a

lack of wide-ranging software and high price tags stemmed inroads into the commercial sector.

The 3000 series, which was first sketched out on Ardent's drawing board 18 months before the merger was completed in October, attempts to patch up part of that problem with entry-level models that begin at \$89,000. Similar Convex and DEC machines top \$500,000, Stardent officials said.

No easy task

While analysts said the refocusing could succeed, it will be a tough sell. "Anytime you take what has been perceived as a specialty tool and place it head-to-head with entrenched competitors, you're talking about a very complex task," said Sandy Gant, an analyst at Santa Clara, Calif.-based Infocorp.

Stardent officials said future models will emphasize the re-

tions, according to Carol Romano, director of nursing information systems and quality assurance at the National Institutes of Health in Bethesda, Md.

Ernst & Young estimates there are fewer than 10 full-blown patient-care systems on the market. "The industry has a crying need for new developments," said Sheldon Dornfest, a Chicago-based hospital consultant.

Patient-care systems tend to be the last place hospitals com-



Stardent's 3000 series a tough sell?

spective strong points of both the Stellar and Ardent products. Stellar's proprietary computational engine will be phased out in favor of the Mips chip, but Stellar's edge in its ability to design high-bandwidth parallel/vector architectures will be maintained.

The Stardent 3000 is also the first machine to use the 32-MHz R3000 Mips chip set, which includes a reduced instruction set computing processor and floating-point processor that together provide performance of up to 32 million instructions per second.

An uncertain future together

After years of bitter battles, can MSA and M&D work as one company?

ANALYSIS

BY NELL MARGOLIS
CW STAFF

Can Management Science America, Inc. (MSA) and McCormack & Dodge Corp., bitter competitors in mainframe applications software, easily glide from acrimony into sweet harmony?

"No way," said an executive at an applications software company that competes with both MSA and M&D. "These companies have been taught to hate each other, to fight at every turn. Now, they're supposed to embrace and turn into co-developers?"

That may just be wishful thinking. Moreover, in the wake of The Dun & Bradstreet Corp.'s



John Imlay

Nevertheless, although Taylor's view was shared by many, several industry executives said the extent of the reciprocal bitterness inculcated in the corporate cultures of MSA and M&D should not be underestimated.

"It was horrible," said Interleaf Systems, Inc. Chief Execu-

ture. In the meantime, Congress should enact legislation setting a seven-day waiting period before purchase of a handgun, the group said in a statement.

Creation of a felon identification system was mandated by the Anti-Drug Abuse Act of 1988 in an amendment that was supported by the National Rifle Association (NRA) as an alternative to a waiting period.

The NRA supported Thornburgh's conclusions and said that the first order of business is to solve record-keeping problems. With existing systems, "checking for felons at the point of purchase is as accurate as a coin toss," said a statement by James Jay Baker, director of federal affairs at the NRA.

The point-of-sale system selected by Thornburgh is estimated to cost up to \$44 million to develop and up to \$70 million a year to operate. The attorney general chose the least costly of the technical options offered by the Task Force on Felon Identification in Firearm Sales, which also considered preapproval systems using smart cards, finger-print scanning and biometric scanning.

Justice

FROM PAGE 1

automated and manual criminal-history systems at the federal and state levels, and many of the automated systems show arrests but not convictions or other final dispositions. The task force estimated that only 40% to 60% of conviction records are automated.

"The lack of readily accessible conviction records is the greatest obstacle to an immediate and accurate felon identification system," Thornburgh said.

The eventual goal is to have local firearms dealers place a telephone call to a state police official, who would then use a computer terminal to find out if the intended purchaser has a criminal record in the national database. If a felony record exists, the sale could not go through.

Unhappy

However, Thornburgh's decision did not please the interest group Handgun Control, Inc., because the screening system will not be implemented until some indefinite time in the fu-

ture Officer Robert K. Weiler, who headed up M&D's sales and marketing effort during the mid-1980s, when the rivalry was at its peak. "All we thought about, all day, every day, was MSA: What are they doing? How can we beat them? We didn't have a meeting at which they were not mentioned."

It didn't stop at talk, said a former M&D employee. He described not just ferocious sales competition but extensive ad hominem advertising and a panoply of dirty tricks. Because of M&D's intervention, he said, MSA salespeople arrived in cities only to find their hotel reservations mysteriously canceled or arrived at airports to learn that their names had been removed from flight manifests.

Ross Systems, Inc. Chairman and CEO Dennis Vohs, who was executive vice-president of MSA during the height of the MSA/M&D wars, declined to go into details. However, he noted, "I'm sure that anything M&D did to MSA, MSA did to M&D. I don't want to soft-pedal it."

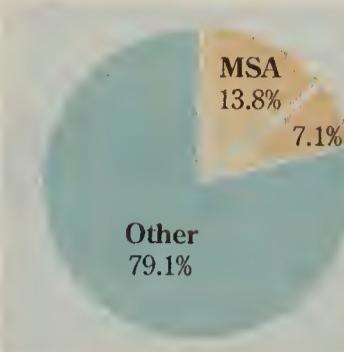
Is this a prospectus for partnership?

"Yes," Weiler said. "I believe it can be. Both of the companies have matured." More importantly, perhaps, he added, so has their target market: "Mainframe market consolidation makes strange bedfellows."

What may be irreconcilable, many observers noted, are con-

More human

The merger will give MSA and McCormack & Dodge a sizable chunk of the human resource application market



Human resource management applications

Percent of market share by revenue (total 1989 U.S. market: \$398 million)

SOURCE: INTERNATIONAL DATA CORP.

CW CHART: JOHN YORK

quarters? Why redundancy right down the line?"

"D&B can't just take two companies and let all the synergies dribble away," Weiler said. "If there aren't location shutdowns and mega-layoffs in this deal, then D&B isn't being responsible to investors or users."

Software company executives, who stand to gain from any slip on the parts of MSA and M&D, are less than disinterested observers. However, their concerns with regard to the upcoming merger last week are mirrored in more objective quarters.

As acquisitions and mergers continue to explode across the industry landscape, said Merrill Lynch Research/U.S. analyst Stephen McClellan, users are not becoming injured. Rather, they are growing increasingly skittish in the wake of each successive big deal.

"They see the pattern: Nobody's safe," McClellan said. "They don't know what to believe and what not to believe. What they do know is that there will be a period of change and uncertainty." Thus, he said, "Customers are slowing down, backing up. Their hesitancy might not be all that sweeping, or all that deep, but it's there."



Frank Dodge

is how a company like D&B can buy two companies, fully support all of their [respective] product lines, which overlap almost completely, and not lay anybody off," said Cognos, Inc. Vice-President Jeffrey Papows, a veteran of both the mainframe application software market and of major acquisitions. "It doesn't take a rocket scientist to know that it can't be done."

What's more, he said, "Even if they could do it, why would they? Why maintain two head-

quarters? They tend to lose a little creativity," said Matsey, a customer of Walker Interactive Systems, a maker of accounting software.

"Big isn't necessarily better," Jones agreed. "We evaluate a company on its individual stability, whether small or large." For Knight-Ridder's Hewlett-Packard Co. systems, Collier-Jackson's accounting software fits the bill. Collier-Jackson was acquired by CompuServ, Inc., but according to Jones, that deal brought even more stability to the company.

In addition to The Dun and Bradstreet Corp. acquisition of MSA, several deals were struck in the applications software market over the past several months, including the merger of Data Design Associates and Integral Systems, Inc.; Ross Systems' acquisition of Cardinal Data Corp.; and CA's buyout of Cullinet Software, Inc.'s systems and applications software.

Merger

FROM PAGE 1

and personnel do not differ greatly. "There are some differentiating features, but more and more it's becoming a price-oriented market," Lester explained.

Most accounting and personnel applications are "pretty plain vanilla," said Michael Jones, di-

rector of information and communications systems at Knight-Ridder, Inc. "There are any number that would meet our needs, but for internal efficiency, we have standardized on one or two."

It seems that users hardly blink anymore when one of their software suppliers is gobbled up. By now, most have lived through an acquisition situation, whether involving their software supplier or their own companies.

Frequently, however, these experiences have led to a wary attitude toward small companies, often perceived as vulnerable. "I tend to be hesitant about doing business with a small company," said Wallace Louder, vice-president of information systems at Safety Kleen Corp. in Elgin, Ill.

However, while some users seek safety in large suppliers, others still prefer the smaller, entrepreneurial types. "I have not been comfortable with large



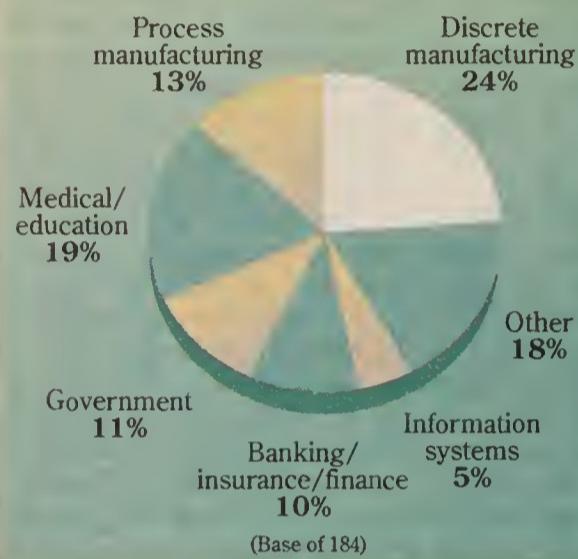
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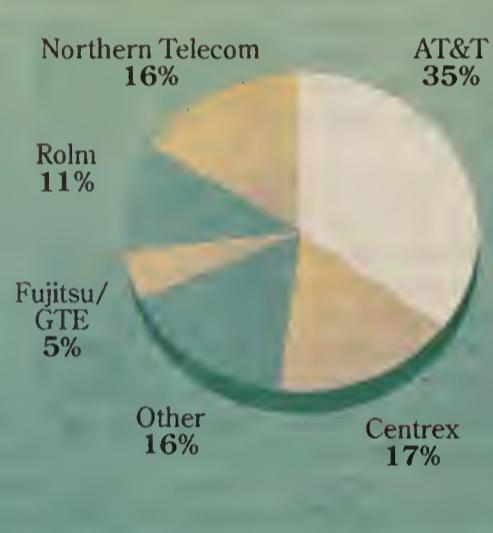


Integrated Services Digital Network is slowly making its way into the real world. In a survey of 4,500 U.S. sites conducted by Computer Intelligence, only 23 had installed ISDN, but 184 indicated that it is on their list of things to do.

The sites planning ISDN were spread among several industries, with the greatest interest being in discrete manufacturing.



Among the sites planning ISDN, AT&T dominated the PBX installations with 35%. Centrex is in use at 17% of the sites.



Installed
(Number of sites, base of 23)

Basic Rate Interface	15
Primary Rate Interface	8

Planned
(Number of sites, base of 161)

Basic Rate Interface	55
Primary Rate Interface	80
Undecided	26

Although 15 of the sites with ISDN installed use Basic Rate Interface, 80 of those planning ISDN moves intend to install Primary Rate Interface lines.

SOURCE: COMPUTER INTELLIGENCE, LA JOLLA, CALIF.
CW CHART: TOM MONAHAN

NEXT WEEK

Service quality is gospel at Florida Power & Light Co., the first U.S. winner of Japan's coveted Deming Prize for corporate quality. Because executives such as Jack Gomm base most decisions on quantified quality indicators, information systems serves as the backbone of the firm's quality efforts. In Depth takes a look at this IS leader.



GARY S. ROSENFELD

OS/2 is still an operating system in search of applications; however, recent developments seem to have at least cleared the path for delivery of software supplies in the second half of 1990.

Product Spotlight describes current choices, explains what has been impeding progress and takes a peek into the software pipeline.

INSIDE LINES

All in the genes?

About 30 years before Robert T. Morris Jr. was charged with being the alleged progenitor of the worm that shut down Internet last year, Robert T. Morris Sr. was among the first programmers to actually concoct a virus. Morris Sr., along with H. Douglas McIlroy and Victor Vysotsky, all young computer scientists at AT&T's Bell Laboratories, invented "Core Wars," a game that pitted self-replicating programs called "organisms" against one another. The winner was the player whose program replicated abundantly and consumed the other player's program and its offshoots.

Crying wolf

It seems some people have it in for Allan Loren, president of Apple Computer's Apple USA division. Rumors that Loren may get pruned from the Apple executive tree or moved to a lower branch continue to be whispered on both coasts. The evidence? His office has been moved from the "executive row" in Apple's DeAnza building to the City Center building in Cupertino, Calif. A company spokeswoman vehemently denied the rumors, saying Loren wants to be with the people who report to him but that he still maintains an office in DeAnza.

An objective expert

Some major players are getting a few of their network management problems solved by tiny start-up Objective Systems Integrators. The firm's founders left another small network management firm, Telwatch, to produce an expert system for network fault management called Netexpert. The package is showing up in interesting places, such as American Express and Nynex's soon-to-be-announced management platform. "We are under nondisclosure to a lot of telcos, computer manufacturers and T1 mux vendors who don't want people to know our software is embedded in their systems," says Objective Systems co-founder Dick Vento. The company is also working on a "super Netview/PC," a Unix-based system that will handle more devices and can be operated by a nontechnical communications expert, Vento said.

Just read the label

Unix, long faulted as one of the least secure operating systems around, is actually quite secure, provided it is used "according to the instructions on the label," said H. Douglas McIlroy, now a top computer scientist and Unix guru at Bell Labs. "Security is loose because of administrative errors and lack of vendor documentation," McIlroy said. "Unix stacks up at least as well as its competitors and better than some of the bigger-name ones."

International . . . to a point

IBM executives were reportedly uneasy at the prospect of Perkin-Elmer Corp.'s semiconductor tools operations being sold to the Japanese. IBM, a user of Perkin-Elmer equipment for 20 years, recently installed a key Perkin-Elmer "stepper" called Tool X for use at its Burlington, Vt., chip factory. Perkin-Elmer confirmed that its two semiconductor operations are still on the block as part of a downsizing scheme announced last April.

Get out your notebooks

Busy week next week for micro software vendors: Lotus will roll out Notes, along with several strategic alliances, while Borland is expected to introduce its Paradox engine and detail its strategy for open systems. Novell is also making a database announcement.

These guys use a database? At least one Computerworld reporter got a neatly typed letter recently from Ingres, formerly known as Relational Technology. Everything was hunky-dory: the writer's proper name, title and address — down to the 9-digit ZIP code. Then came the salutation: Dear Shirley. Oops: There are no Shirleys here. Well, that was forgivable. But the line that read "Please include the related announcement in the appropriate issue of the New York Daily News" wasn't. Shirley you jest. We're storing up bloopers for the end of the year, so call them in to News Editor Pete Bariolik at 800-343-6474, 'cause it's almost here.

*"I suppose, Dorfman, in its broadest sense,
you could call this networking."*



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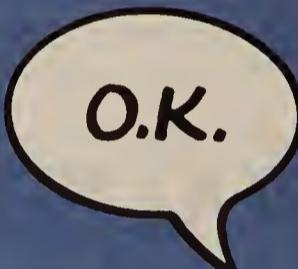
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